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# **USSR Report**

**TRANSPORTATION**

**No. 115**



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MOTOR VEHICLE

RSFSR MINISTER OF MOTOR TRANSPORT ON DEVELOPMENT OF MOTOR TRANSPORT SECTOR

Moscow AVTOMOBIL'NYY TRANSPORT in Russian No 12, Dec 82 pp 2 -

[Interview with Ye. Trubitsyn, RSFSR Minister of Motor Transport and Hero of Socialist Labor; date and place not given]

[Excerpts] The motor transport workers, just as all Soviet people, are striving to celebrate the glorious jubilee -- the 60th anniversary of the formation of the USSR -- by improving work quality and effectiveness and by improving the transport service of the national economy.

Our correspondent addressed a request to the RSFSR Minister of Motor Transport to talk about the branch's present development level and motor transport's tasks during the 11th Five-Year Plan.

[Question] Yevgeniy Georgiyevich, what has been done by the ministry to carry out the Food Program?

[Answer] An important role in carrying out the measures, which are aimed at realizing the Food Program that was approved by the May 1982 CPSU Central Committee Plenum, belongs to motor transport. During the past three five-year plans, the RSFSR Ministry of Motor Transport has carried out the measures which were developed to improve the transportation and dispatching service of agriculture and of the population in rural areas. During the years of the 10th Five-Year Plan alone, the shipping volume of goods for agriculture, which was carried out by the ministry's transport enterprises, increased by 46 percent compared with 1975. The annual amount of peat shipped to the kolkhozes and sovkhozes of the RSFSR non-chernozem zone reached six million tons. In the motor vehicle repair enterprises for agriculture, capital repairs were made to more than 14,000 trucks, 70,000 engines and 15,000 other assemblies. Garage equipment, spare parts and accessory items and units for different agricultural machines worth 24,800,000 rubles were manufactured by industrial enterprises and delivered to agriculture. At the request of the kolkhozes and sovkhozes in the RSFSR non-chernozem zone, motor vehicle schools and training combines prepared more than 29,000 drivers. In the rural area of the Russia federation, an additional 850 receiving points for the population's transport and dispatching service were organized and more than 2,000 regular bus lines were inaugurated.

The ministry is paying special attention to the solution of such an important task as the insuring of the removal of the harvest, which has been grown by the village workers, within a short time and without losses and the uninterrupted servicing of the harvest equipment in the fields.

On the instructions of the RSFSR Council of Ministers, the drivers of our ministry have effectively operated all the transport systems, which are involved in harvesting, regardless of their departmental affiliation during the last 10 years.

For this purpose, a single dispatching body for motor transport was organized in all the main agriculture oblasts, krays and autonomous republics.

A far-flung network of dispatching services, groups, points, and centers for controlling the shipment of agricultural products was created in the transport administrations and motor transport enterprises of the ministry.

Such progressive methods as the centralized delivery of grain to grain-receiving enterprises according to hourly schedules, the effective planning and control of agricultural shipments using computers, the brigade contract, and the transshipping method of harvesting and transporting sugar beets, are being widely used in organizing the shipments of agricultural products.

It is completely clear that the decisions of the May 1982 CPSU Central Committee Plenum on realizing the Food Program require a significant improvement in the transport services of agriculture; in the construction, road and other organizations which are working in the village; and in the population of the rural area so as to obtain positive results. In June of this year, an expanded board of the RSFSR Ministry of Motor Transport together with the presidium of the Central Committee of the motor transport and highway workers trade union discussed the tasks of enterprises and organizations in insuring the carrying out of the decisions of the May 1982 CPSU Central Committee Plenum and defined concrete quotas for the enterprises under their jurisdiction. It was stipulated that the volume of shipments of goods for agriculture be increased by 1985.

The shipping volumes for road and construction organizations, which perform their work in the agricultural areas of the RSFSR non-chernozem zone, should also grow.

It was planned to insure the use of centralized transportation of grain, potatoes, vegetables, sugar beets, and other agricultural products to state procurement and processing enterprises during the harvest using economic and mathematical methods and computers by 1985— in 500 agricultural rayons, and it is also planned to secure an annual growth of 7-10 percent in the shipping volume of vegetables, fruits and melons from the rayons of the Volga area and the Northern Caucasus using general use motor transport.

The approved quotas provide for a significant increase in help to agriculture in the training of driver personnel, the manufacturing of garage

equipment, units and items for agricultural machines, and the overhauling of trucks, engines and other assemblies.

[Question] Please talk about the measures to improve the planning and management of motor transport.

[Answer] When developing plans for the enterprises and organizations which are under our jurisdiction, we proceed from the need to insure the complete satisfaction of the national economy's and population's requirements for the transportation of goods and passengers with the least expenditures. Under these conditions, the planning of shipments takes place in a composite manner with a consideration for the development of the production capabilities of the motor transport enterprises.

Measures are provided in the plans to accelerate the introduction of the accomplishments of scientific and technical progress into motor transport, to improve the organization of the shipping process, and to raise the labor productivity and quality of the national economy's and population's transport service. Special attention is paid to insuring the effective use of fixed capital and material, labor, and financial resources; to the economic expenditure of fuel, tires and spare parts; and to the elimination of losses and non-productive expenditures.

At the present time, the development of a long-term complex program for the development of transport is being completed by the USSR Gosplan with the participation of many interested ministries and departments, including the RSFSR Ministry of Motor Transport.

This program is being developed in order to fulfill the tasks which flow from the decisions of the November 1981 CPSU Central Committee Plenum. Measures along different lines are being stipulated in the field of developing motor transport as a component part of the country's single transport system. The main ones of them are: the shift of motor transport to the industrial form of organization and management methods, the priority development of general use motor transport, increasing the effectiveness of its operations, improving the quality and expanding the list of transport services which are offered to the national economy and the population, and decreasing transportation costs in the national economy.

These directions are primarily based on intensive development factors which insure a significant increase in labor productivity in motor transport.

[Question] Yevgeniy Georgiyevich, what difficulties exist in the branch's work?

[Answer] There are quite a few of them. For example, large tasks face us in the economic and rational use of fuel and lubricant materials. During the current five-year plan, it is necessary to decrease the specific expenditure of fuel for the performance of a transport work unit by 11.3 percent as opposed to the 1980 level. The carrying out of such a strenuous

task requires from all enterprise and organization collectives the mobilization and putting into operation of all internal reserves. However, the existing shortcomings in the organization of work to economize and rationally use fuel and energy resources and the at times direct irresponsibility of certain economic leaders create serious obstacles in the work of carrying out assigned tasks.

At the same time, there are serious shortcomings in the supplying of motor transport with fuel and lubricant materials when -- despite the decisions-- the established plans for shipping national economic goods are not balanced with material and technical resources. Such a situation leads to the disorganization of the work of motor transport, to a lowering of its productivity and to a disruption in the fulfillment of the shipping plan. In connection with the low level of equipping enterprises with the necessary garage equipment, large difficulties arise in matters concerning the improvement of the motor vehicle's technical operating level, in particular in insuring the good working order of the engine's fuel equipment and other vehicle units and assemblies which affect fuel economy.

Empty runs by vehicles have still not been eliminated. There are cases where movement schedules and the periods for delivering goods are being disrupted. The status of work and road transport discipline does not correspond to modern requirements in all collectives. We have still not been able to solve in a positive way a number of problems which are hindering the development of motor transport.

State-wide planning of the shipping volume for goods in international communications is still not being carried out. A considerable disproportion between the exported and imported volume of goods, which are being transported by Soviet motor transport, is being tolerated. International shipments are not being supplied with sufficiently competitive and economic rolling stock of native manufacture. At the same time, there are large volumes of goods which it would be more economically advantageous to ship by motor vehicles. Unfortunately, these goods are being slowly switched over from railroad and other types of transportation to motor vehicle transport.

The network of key transport and dispatching enterprises and warehouses is not sufficiently developed. This restrains the transport and dispatching service in international communications.

The workers of the ministry and planning bodies are faced with doing a great deal in order to eliminate these and the other shortcomings in the work.

[Question] What is the role of socialist competition in the task of the branch fulfilling the state plans?

[Answer] The ministry is paying a great deal of attention to involving all motor transport workers in the competition to fulfill planning targets ahead of time and to search for production reserves which would permit the needs of the national economy and the population for cargo and passenger

transport to be fully satisfied with the least expenditure of labor and material resources. At the present time, more than 46,000 brigades of drivers and repair personnel, including 5,511 composite ones, have been organized in the enterprises which are under the subordination of the ministry; and 3,443 collectives are working according to the brigade method.

More than 100,000 drivers are participating in the competition to increase the runs between repairs. The competition has been well organized in the Privilzhskoye Streetcar and Trolley Administration, the Sredne-Volzhskoye Transport Administration, and the Zapadno-Sibirskoye Streetcar and Trolley Administration. The statute on the RSFSR Ministry of Motor Transport worker's socialist competition to improve rolling stock resources before an overhaul through the limited expenditure of spare parts was approved in 1982.

During the competition in honor of the 60th anniversary of the founding of the USSR, Ya. A. Gritsenko, the leader of a brigade of truck drivers in Podolskaya Motor Vehicle Column No. 1276 of the Main Moscow Oblast Motor Transport Administration, reported about completing the quotas for four years of the five-year plan by his professional holiday -- the Day of Motor Transport Workers.

A. S. Malanin, a driver in Motor Vehicle Column No. 1163 in the Verkhne-Volzhskoye Streetcar and Trolley Administration, has completed the 11th Five-Year Plan.

N. F. Gerasimenko, a Hero of Socialist Labor from the Otradnenskoye Cargo Motor Transport Enterprise of the Main Krasnodar Motor Transport Administration, leads a contract brigade to which KamAZ vehicles have been attached. Every driver in the brigade overfulfills the planning quotas every day. The collective completed the plan for this year on 1 Oct and for two years of the five-year plan -- on 1 July of this year. The good work organization and each driver's excellent knowledge of the equipment has permitted the on-line release coefficient of motor vehicles to be brought to 0.92. The time span of their operation is 11.8 hours. The brigade has saved 4,600 liters of fuel.

A Komsomol and youth brigade of drivers in the Ust-Kutskoye Motor Transport Enterprise of the Vostochno-Sibirskoye Streetcar and Trolley Administration, which is headed by V. M. Krovyakov -- a Leninist Komsomol prize winner, is participating in the technological cycle to process national economic cargo in the Osetrovskoye River Steamship Company. A contract on cooperation with the brigades of longshoremen to decrease the time for handling vessels and demurrage during loading and unloading operations has permitted the collective to carry out the annual plan ahead of time -- on 31 October 1982.

It is possible to cite more examples of the work of progressive collectives; however, these graphically confirm the high role of socialist competition in the carrying out of production tasks and adopted obligations.

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MOTOR VEHICLE

DEPUTY MINISTER EXPLAINS PARTS SUPPLY SYSTEM FOR KAMAZ COMPLEX

Moscow ZA RULEM in Russian No 12, Dec 82 pp 8-9

[Article by V. Faustov, deputy minister and general director of the Kamskoye Association for the production of heavy-duty trucks (KamAZ): "The Entire Country Is Building the KamAZ"]

[Text] Every time that I meet a KamAZ truck on the road, I experience a dual feeling. On the one hand, it seems a common place phenomenon -- the 300,000th machine has come off the production line this year. On the other hand, however, it all still seems a miracle -- 13 years ago, the steppes spread out on the place where the factory now stands. At that time, tens of thousands of builders went down to the shores of the Kama to the neighborhood of the small city of Naberezhnyye Chelny to erect a new factory for the production of heavy diesel trucks. People of 60 nationalities in our motherland worked here with the enthusiasm, energy and persistence which reflected the Soviet character.

In his address to the builders, fitters, operators, and to all the collectives which were taking part in the construction of the KamAZ, Leonid Il'ich Brezhnev called its construction an exploit of the Soviet people. The popular expression "The entire country is building the KamAZ", which was born during those years, included within it the essence of its multinational unity.

The plant complex on the KAMA embodied in itself all the latest and advanced features of modern machine building: an unusually high level of production concentration, wide-spread technological automation, thorough specialization combined with broad external cooperation. The lines, which you have just read, may appear at first glance to be prosaic and common-place. In order to reveal the greatness (I am not afraid of such a definition) of the thought hidden behind them, not an article but a book is needed. Therefore, I will limit myself to a few examples.

When evaluating the sum total of the industrial enterprise's capabilities, economists use such a concept as the fixed capital of production. Those of the KamAZ are greater in ruble cost than those of the recognized giants of our motor vehicle building industry -- the ZIL, GAZ, and VAZ. The saturation level of KamAZ with equipment can be judged from the following indicator: Its share of machines and equipment in production fixed capital is 65 percent. For a comparison, I will recall that it usually varies between 50-60 percent in our machine-building enterprises.

The term "automation" has become an everyday one during the age of the scientific and technical revolution. We in the association have already become accustomed to the fact that automatic transfer lines form the primary portion of the technological equipment. Specifically, KamAZ makes 90 percent of the castings (based on bulk), 40 percent of the forgings and practically all the main components in assembly and diesel production using automated conditions.

More than 800 automatic and semi-automatic production lines are now operating in the association's plants. The physical labor of people has been replaced in them by the work of more than 1,000 mechanical arms and several dozen industrial robots. Computers direct them. According to the level of automation and overall mechanization of production, KamAZ occupies one of the highest places in the country -- and we manufacture heavy-duty diesel trucks.

Automatic transfer lines, equipment, computers, instrumentation, very complicated electronics -- all this is the creation of the Soviet people, the representatives of the different union republics. Today, during the year of the 60th anniversary of the formation of the USSR, we can say with complete justification that the entire country is building the KamAZ. Yes, the entire country is building them just as the KamAZ are working throughout the country.

At the beginning of the 11th Five-Year Plan, production capabilities for the output of 150,000 diesel trucks a year were put into operation here in Naberezhnyye Chelny. Based on their load-carrying capacity, they do not yield to all the trucks which were produced in our native plants during 1970. The importance and role of these vehicles in the national economy can be judged from the latest fact that more than 100,000 KamAZ transported grain and other bulk agricultural products during the harvest.

The formula "The entire country is building the KamAZ" reflects the requirements of modern mass production with its complicated system of cooperation in volume and nomenclature which is characteristic of our developed socialist economy. It is sufficient to say that we receive more than 2,400 types of component parts and units through cooperation. Today, 133 parts suppliers from seven union republics are our permanent suppliers (the most important of them are in the list provided here). In addition, more than 230 enterprises of the Ministries of Ferrous and Nonferrous Metallurgy supply the association with rolled products, raw material and blanks. I will point out that the commissioning of KamAZ required the serious reconstruction of more than 40 plants and the construction of 30 new enterprises. Among them were the Neftekamskiy dump truck plant, the Krasnoyarskiy trailer plant, the Yaroslavskiy diesel equipment plant and the Kostromskoy "Motordetal'" plant.

Today, when celebrating the 60th anniversary of the formation of the Union of Soviet Socialist Republics, there is every justification for saying that the erection of such an industrial giant as KamAZ and the expansion of the output of trucks have strengthened the harmonious ties of the dozens and hundreds of multinational work collectives who are taking part in the production of items which are required by every union republic.

RSFSR

Moscow -- bearings  
Leningrad -- storage batteries  
Balakovo-- rubber goods  
Belebey -- normalizers  
Bor-- glass  
Vladimir -- control instruments  
Volzhskiy -- rubber items  
Dzerzhinsk-- plastic items  
Dimitrovgrad--body fittings  
Kazan-- felt items  
Kostroma--pistons and cylinder sleeves  
Kuybyshev-- generators and bearings  
Livny-- filters  
Michurinsk--water pumps  
Nizhnekamsk-- tires  
Novosibirsk-- driver instruments  
Oktyabrskiy--control instruments  
Omsk-- tires  
Podolsk-- storage batteries  
Prokopyevsk--bearings  
Roslavl-- brake equipment  
Rostov-na-Donu-- bearings  
Saratov-- bearings  
Stavrovo-- window washers  
Stupino-- plastic items  
Syzran-- plastic items  
Tolyatti-- starters  
Uzlovaya--plastic items  
Shadrinsk-- radiators  
Yaroslavl-- heating equipment

Ukrainian SSR

Kiev-- mattresses for sleeping areas  
Sinelnikovo-- springs

Belorussian SSR

Minsk -- bearings  
Bobruysk-- rubber items  
Borisov-- hydraulic booster controls  
Grodno-- shock absorbers

Kazakh SSR

Taldy-Kurgan-- storage batteries

Lithuanian SSR

Panevezhis-- compressors

Latvian SSR

Riga -- control instruments

Estonian SSR

Tallin-- safety features

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MOTOR VEHICLE

METHODS FOR IMPROVING ROAD SURFACING QUALITY

Moscow AVTOMOBIL'NYYE DOROGI in Russian No 12, Dec 82 pp 18-19

[Article by A. O. Sall', a candidate of technical sciences, and engineers V. N. Lukant'yeva and Ye. I. Shashkova: "Increasing the Quality of the Covering Foundation's Structure"]

[Text] Every year, the Sevsapdorstroy Trust constructs approximately 100 kilometers of highways with basic surfaces. Various stone materials, expenditures on which are up to 50 percent of the cost of the pavement, are used for the surface's foundations. For a number of years and in close cooperation with the Leningrad branch of the State All-Union Road Scientific and Research Institute, the introduction of local materials has been expanded in the trust, and advanced technological methods for the construction of pavement foundations are continuously improved.

The optimization of the physical and mechanical qualities of the materials, which are being used for the installation of crushed stone foundations, and ways to improve their rigidity during the construction and operation period have been subjected to test and production inspections. The quality of the foundation sections, which were built with different materials, as well as the technological methods for improving rigidity were evaluated using a rigidity index (modulus of elasticity) and by comparing it with the designed one. As a result of the research which was conducted and of the incorporation of its results into construction practices, the following effective ways to increase the effectiveness and quality of pavement foundations were established: the creation of a firm structure for the crushed stone layer--this is insured by rational selection of the stone material and by additional intensive packing of the layer; reinforcing the crushed stone foundation with small doses of binding agents using the impregnation method.

The main principles for classifying and selecting stone material, for the construction technology of crushed stone foundations without binding agents and those reinforced with cement and sand blends using the impregnation system, and the monitoring and control of quality in constructing foundations have been reflected in the Methodological Recommendations. An attempt is being made in this article to further develop these principles.

It has been established that the packing and rolling of crushed stone layers, which have been prescribed by the standards in effect, provide insufficient rigidity to them. In this regard, the modulus of elasticity of a foundation layer made from solid crushed stone is changed from 130 to 300 MP (less values -- for igneous rocks), but the calculated standard modulus of elasticity, which is adopted in the design, plans and specifications in accordance with VSN 46-72, should be from 350 to 450 MP. Subsequent packing and forming of the layer under the effect of construction and transit transport (approximately 1,000 trips by heavy trucks) considerably increases the layer's modulus of elasticity (up to 200-350 MP). Therefore, the passage of transport equipment over the rolled foundation was recommended (1,2) as an effective measure which is carried out without any special difficulty during the correct organization of the foundation's construction -- with the movement of material to the site from quarries and storage and transshipping bases for the foundation being laid. However, even after the additional packing, the moduli of elasticity of the crushed stone foundations do not reach the VSN 46-72 calculated standard values, which therefore require a more precise definition in the lower direction. In addition, the established requirements for the residual porosity of the foundation (for hard packed crushed stone-- no more than 20 percent, for durable lightly packed crushed stone -- no more than 14 percent, and for not very durable -- no more than 12 percent) cause the need to reexamine the standard safety factors for packing and, correspondingly, the expenditure of stone material.

The construction experience, which has been accumulated by the Sevzapdorstroy Trust, has shown that the greatest density and rigidity are achieved when using crushed limestone from the "Kikerino" deposit which has been under development for many years. Having a rather high strength (the majority of the tests show a crushability mark of no less than 600), the crushed stone is easily packed and well formed under the movement of motor vehicles. Crushed stone with a size of 40-70 mm is used for the main deposit and that with a size of 10-40 mm-- for the wedging. After rolling, a solid surface is created which excludes the necessity for a second wedging with finer crushed stone in accordance with SNiP III- 40 - 78. The requirement for imported crushed stone of two sizes for wedging complicates and raises the construction costs. Under certain conditions, the use of local, more accessible stone material: gravel and sand mixtures, granite siftings, etc. (1), as wedging material, turned out to be more economical. In this, however, it is necessary to take into consideration the lowering of the layer's modulus of elasticity by 15-20 percent. This is not always economically advisable.

Economic and technical effects are achieved when constructing foundations with crushed limestone having a size of 20-120 mm using the self-wedging system. This crushed stone is cheaper than crushed stone having a size of 40-70 mm. The overall modulus of elasticity of this foundation reached 80 MP in the test section. This exceeded the design requirements by 15 percent. In our opinion, however, the test construction conditions for the formation of the layer's firm structure were extremely favorable -- for two months, from the time of the packing until the test, the foundation was affected by motor vehicle transport (up to 200 calculated motor vehicles per day).

Therefore, it is necessary to define more precisely the magnitude of the technical effect from replacing graded crushed stone with a crushed stone blend under broader test and production conditions.

It has been established that the modulus of elasticity of the crushed stone layer continues to grow under the prolonged effect of motor vehicle transport (more than 1,000 trips) (1). This is confirmed by experiences in constructing one of the sections of the Leningrad-Murmansk category 1 road. A sand layer with a thickness of 50 cm and a foundation made of "Kikerino" crushed lime-stone having a size of 40 - 70 mm using the wedging method with a thickness of 20 cm was laid on an earth roadbed. Over the course of a year, the foundation was used under the conditions of motor vehicle movement having an intensity of up to 200 calculated motor vehicles a day. According to the test data, the overall modulus of elasticity of the foundation was 100 MP in May 1980 (immediately after the wedging) but it had changed within the limits of 150 to 180 MP in May 1981 in certain sections. The larger values of the modulus of elasticity were established in those places where the maximum movement intensity had been determined during the year which passed. Such a considerable growth in rigidity and, in all probability, in the strength of the construction was caused not only by the forming of the granular material but also by the improvement of the hydrolycity of the earthen roadbed in connection with the increase in the water impermeability of the additionally packed crushed stone layer.

The established effect in the increase of the foundation's strength during its use before the laying of the asphalt cement layers permitted the construction of road pavement in certain sections with a decrease in the overall thickness of the asphalt cement layers from 16 to 12 cm to be reexamined considering the increase in the overall measured modulus of elasticity over the designed one.

Thus, the two-stage test construction of road pavement with the laying of the crushed stone layer during the first stage and the allowing of movement over it and with the laying of the asphalt cement layers during the second layer a year later (under certain conditions, this could be more advisable after two-four years) permitted the task of saving asphalt cement and scarce oil asphalt to be solved by decreasing the thickness of the road pavement.

A test section with a length of 3.3 km has been constructed using the described technology. It has been determined by tests which have been conducted that the overall sagging of the road pavement, as a rule, does not exceed the designed one. The economic effect from the incorporation of the two-stage construction of the road pavement was 10,000 rubles per kilometer.

With the accelerated commissioning of roads with an asphalt cement covering, the use of motor vehicle movement to form the granular material of the foundation is not usually always possible. Therefore, when designing a road pavement for high-speed construction, it is necessary to take into account the minimum values of the prescribed moduli of elasticity. In particular, when delivering material over special access paths and when excluding motor vehicle

movement on the travelling section, the modulus of elasticity of the crushed stone layer should be considered equal to 110-250 MP. In this case, the increasing of the bearing capability of the crushed stone foundation is possible only by reinforcing its inorganic binding agents (1,2).

Crushed stone foundations, reinforced by a cement and sand mixture using the impregnation method, have been well proven by construction practices (1,2). The new technology for constructing crushed stone foundations using the wedging method with the impregnation of a layer of cement was used on an eight kilometer section of category 1 road which is being built. Cement with a quality of 400 was spread at 14 kilograms per square meter on the surface before the depositing of the wedging material. The impregnation and redistribution of the cement into the layer took place as a result of the roller's vibration effect; the penetration of water, which was poured on the surface (up to 30 liters per square meter), into the voids; and the guttings and intensive combined packing by the vibration, pneumatic and hammering rollers. The work cycle from the spreading of the cement to the rolling was accomplished during one shift. The level and solid surface of the foundation, which was created after the rolling, was maintained during the passage of construction transports over the section. It was established by measurements that the cement had penetrated to a depth of 10-15 cm. The reinforced layer's modulus of elasticity reached 1,000 MP after a 28 -day hardening of the cement.

The growth in the rigidity of the hardened foundation was determined in a sector which was closed to transit transport. According to mean data, the foundation's overall modulus of elasticity was 79 MP after the rolling, 95 MP after 7 days, 109 MP after 14 days and 127 MP after 28 days. The 1.6 -fold increase in the construction's rigidity testifies to the effectiveness of the new technology. The slowly attenuating nature of the growth in rigidity permits one to expect the creation of a reserve of it with subsequent hardening.

A two-layer asphalt cement covering with a thickness of 10 cm was laid on the crushed stone foundation which was reinforced with cement.

An 8.2-kilometer section was constructed using the described technology. As tests showed, the size of the depression on this section corresponded to the designed one. The economic effect was approximately 6,000 rubles per kilometer.

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MOTOR VEHICLE

ROTARY ENGINE DEVELOPMENT CONTINUES

Moscow ZA RULEM in Russian No 1, Jan 83 pp 10 - 11

[Article by S. Mar'in: "Soviet Equipment"]

[Text] It is a normal VAZ-21011 in appearance. Only the label gives away its secret: "VAZ-21018 car, designed for individual and official use. Equipped with a single-section rotary piston internal combustion engine". Having read these lines, almost every visitor to the transport equipment pavillion in the 1982 "Scientific and Technical Creativity of Youth" (NTTM) exhibition asked to raise the hood. There, the compact aluminum casing of the new motor could hardly be seen among the usual tanks, filters and storage battery. In length, it occupies an unbelievably small space. Therefore, the transmission in the VAZ-21018 has been displaced appreciably forward. The inquiring eye will immediately find a "disorder" in the passenger section of the VAZ-21018--the gearshift lever appears somewhat closer than usual to the instrument panel.

What is the engine of this machine? The index number VAZ-311 has been awarded to it. It is a single-section (with one trihedral rotor); it is water-cooled and has an electronic ignition system. It has 70 hp/52 kw at 6,000 revolutions per minute. The maximum torque is 9.7 kg(f)/95 newton-meters at 3,500 revolutions per minute. According to these indicators the rotary VAZ-311 is practically no different from the piston VAZ-21011. But how does their volume of work compare? Before answering that question -- a slight digression.

A piston four-step single cylinder engine burns during two revolutions of the crankshaft an amount of fuel-air mixture equal to the working volume of the cylinder. Because of the specific nature of its operating process, a rotary one burns twice as much mixture for the same two revolutions. Based on this it has become accepted to consider its working volume as being equal to twice the volume of the combustion chamber. This, the so-called adduced, working volume for the VAZ-311 is 1,294 cubic centimeters, that is, the same as the piston VAZ-21011. In comparing the engines in weight, we should point out that the rotary VAZ-311 is 18 percent lighter than the VAZ-21011, which has a weight of 114 kilograms (without the special attachment and gear box), thanks to its greater compactness and smaller number of parts.

The compression ratio of the new motor is 9.4 and that is why it requires high octane gasoline. Of the many NTTM visitors, 82 were interested, naturally, in the fuel expenditure. It is no secret that during recent years rotary piston engines have maintained the reputation of being uneconomical. Interesting figures were cited on the label next to the exhibition display: minimum specific expenditure of fuel -- 215 grams/hp per hour and 8 liters/100 kilometers at a speed of 90 km/hour. For comparison, the analogous indicators for the VAZ-21011 are 225 grams/hp per hour and 7.8 liters/100 km, respectively.

The VAZ-21018 (its fitted-out weight is 955 kg, the same as the VAZ-21011) develops a maximum speed of 143 kilometers per hour.

Why did the first official appearance of the VAZ-21018 "for people" occur at the NTTM exhibition? The fact is that the developer of its new engine was the youth collective of the rotary engine design bureau in the Voizhskiy Motor Plant which has performed a great deal of work for several years in the designing, testing and operational development of the power plant.

A test batch of these automobiles is now in operation. These distinctive tests under conditions, which approximate real ones as closely as possible, are helping to gather data which is very necessary for further improving the motor. It is interesting that the first high-speed tests of the "Zhiguli" with rotary engines were also held this year. Two "rotary" vehicles were represented in the "races of the stars" during the automobile cross-country races which were held in Estonia at the end of the summer of 1982.

Vitaliy Bogatyrev, the nation's champion from Togliatti who is in a class by himself, carried the day with a great advantage in one of them.

Do the victory in the cross-country race and the first public demonstration of the rotary VAZ mean that the main difficulties are behind us? No, the painstaking operational development of the new design and solid experiments are needed for the machine to fully satisfy the requirements of mass production. The work continues.

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## OCEAN AND RIVER

### MARITIME FLEET PLAN FULFILLMENT FOR 1982

Moscow VODNYY TRANSPORT in Russian 18 Jan 83 p 1

[Article: "Maritime Fleet"]

[Text] The workers in sea transport have completed the 1982 year by fulfilling their quotas ahead of time. Operational data shows that the branch fulfilled the annual plan for the coastal shipping of freight by 103.4 percent, overseas navigation -- by 103.7, and for loading and unloading operations in ports -- by 102.1.

The work was performed during the fourth quarter of last year under the difficult navigation conditions of the fall and winter period. The Caspian and Sakhalin Steamship Lines were in a difficult situation with respect to fulfilling the plan for coastal shipping, and the Novorossiysk one -- in shipping overseas. The inadequate submittal of goods for shipping led to a considerable lag in the fulfillment of the quotas by these collectives. The additional measures, which were taken jointly by the steamship lines and the Main Dry Cargo Fleet Administration of the Ministry of the Maritime Fleet to increase the loading of vessels, permitted these steamship lines to make up the lag and cope with the fourth quarter tasks. The Murmansk and Northern Steamship Lines also required considerable help in fulfilling the plans for overseas shipping.

The Estonian Steamship Line collective did not fulfill the fourth quarter quotas for coastal shipping. The primary reason was the inadequate loading of the automobile ferries which connect Tallin with the islands due to temporary restrictions in the movement of motor transport. Steps were taken by the steamship company to improve coastal shipping using transport vessels; however, they did not manage to make up the losses completely. The main indicator for overseas shipping was not fulfilled by the Azov Steamship Line.

The highest results during the fourth quarter were achieved by the collectives of the Latvian, Black Sea, Novorossiysk, Soviet Danube, and Far East Steamship Lines in coastal shipping; and by the collectives of the Estonian, Latvian, Lithuanian, Caspian, and Sakhalin Steamship Lines in overseas shipping. For the ministry as a whole, the plan for coastal shipping was fulfilled by 104.6 percent during the fourth quarter, and for overseas shipping -- by 102.8 percent. The December quota was also fulfilled by the branch in both types of shipping.

Grain and chemical cargoes, coal, ore, fertilizer, ferrous metals, construction materials, and lumber were shipped in volumes which exceeded the planned ones according to the schedule. Shipments of grain cargoes were fulfilled for the ministry as a whole by 148 percent, and for fertilizers -- by 121.

Using powerful ice-breakers and Arctic navigation vessels, the Murmansk and Northern Steamship Lines insured year-round navigation during 1982 in the western sector of the Arctic on the Dudinskoye route. The planned target for shipping goods from Dudinka, however, was underfulfilled.

The seamen of the Murmansk, Northern and Lithuanian Steamship Lines performed extremely critical work. During the short period of summer navigation, 210,000 tons of large diameter pipe for the construction of the Urengoy-Uzhgorod pipeline were delivered from European ports to the Okskaya inlet and transferred to river vessels.

The Far East seamen extended navigation in the ports of eastern Siberia using powerful ice-breaking equipment. Whereas the delivery of goods to Sakhalin and Kamchatka was within the prescribed quotas, the delivery of goods to Magadan was complicated by the insufficiently good work of the Magadan transport center. Despite the measures which were adopted to intensify the activity of the recipients of the goods, motor transport enterprises and dockers, the quota of the USSR Gossnab to deliver 7,300 tons of goods per day was not fulfilled and, as a result, approximately 240,000 tons of cargo were not delivered on the Magadan route. Considering this, it was necessary for the collectives of the Far East and Sakhalin Steamship Lines to organize from the first days the movement of vessels from Vanino and Nakhodka according to a strict schedule, achieving the strict observance of it and a very strict monitoring of the processing of the fleet in the ports. It was necessary for the directorship of the Far East Steamship Line to increase organizational activity in the Magadan transport center in coordinating the work schedules of the port and all cooperating enterprises, achieving the daily fulfillment of the prescribed quota.

The seamen of the Azov Steamship Line completely satisfied the requirements of its customers in the shipment of coal and ore on the Poti-Sea of Azov Ports line. However, the results here could have been better if the suppliers of manganese ore from Chiatura and the workers of the Transcaucasus Railroad had shipped the planned amount of freight to the port of Poti in a timely fashion. The shortage of goods at the moorings caused vessels to stand idle, lowering their work indicators.

The Latvian and Primorskoye Steamship Lines fulfilled their quotas for the delivery of petroleum products to Arctic points and to Dudinka under difficult ice conditions. The Caspian seamen transported more than 18.2 million tons of various liquid cargo. The orders of the USSR Ministry of Fish Industry for the delivery of fuel to very remote fisheries were completely fulfilled.

At the same time, not everything has been done in organizing coastal shipping to improve the business contacts of the steamship lines with the planning

bodies and with cargo dispatchers. As a result, the actual submittal of goods does not correspond to their planned amount. The absence of material responsibility on the part of clients and transport departments for the non-full-fulfillment of their obligations to deliver goods, which have been provided for by the plans, and for their transportation causes the appearance of overstated orders which are not supported by actual submittals of goods during their realization. This has especially affected the work indicators of the Sakhalin and Caspian ferry crossings.

Export and import freight was further expanded during the past year. Soviet vessels satisfied foreign trade requirements in practically all areas of world shipping.

According to operational data, 6.7 million tons of goods in containers and 12.8 million tons in packages and on pallets were shipped last year for the ministry as a whole.

At the end of last year, in December, the carrying of passengers by all types of fleets reached 2.4 million people for the branch as a whole. A total of 52.3 million passengers were carried during all of 1982. The seamen of the passenger transportation and port fleet of the Black Sea Steamship Line carried half of them.

**Fulfillment of the Plan for Coastal and Overseas Shipping During 1982  
(in percent)**

<b>Steamship Line</b>	<b>Coastal</b>	<b>Overseas</b>
Northern	103.3	102.2
Murmansk	102.2	102.5
Baltic	101.1	101.2
Estonian	101.2	112.9
Latvian	114.2	104.7
Lithuanian	---	102.0
Soviet Danube	109.6	104.0
Azov	103.4	101.1
Black Sea	112.8	103.2
Novorossiysk	104.2	101.9
Georgian	101.0	103.4
Caspian	102.2	169.9
Far Eastern	107.6	104.8
Kamchatka	100.6	103.3
North Eastern Route	106.6	---
Sakhalin	102.2	117.8
Primorskoye	100.4	103.6
Ministry of Maritime Fleet total	103.4	103.7

The Central Asian Steamship Line fulfilled the 1982 shipping plan for tonage by 104.5 percent and for tonage miles by 100 percent.

## OCEAN AND RIVER

### MARITIME FLEET PERFORMANCE FOR JANUARY 1983

Moscow VODNYY TRANSPORT in Russian 15 Feb 83 p 1

[Article: "The Maritime Fleet"]

[Text] The January plan for the shipping of cargo by maritime transport was fulfilled successfully by the ministry. More than 130,000 tons of freight were shipped coastally above the plan. The collectives of the maritime steamship companies basically coped with the prescribed quotas in this type of navigation.

The overall volume for shipping goods coastally was more than four million tons in January and exceeded last year's account for the similar period by more than 16 percent. The fulfillment of the plan for shipping dry goods was 100.5 percent, and for liquid goods -- 106.7 percent. In doing this, all the goods, which were submitted for shipping, were dispatched from the ports according to schedule. However, the January results could have been better if the ministries, supplying enterprises and railroad workers had observed planning discipline and set up an accurate work rhythm for the transportation of goods to the ports. The question of delivering goods became especially urgent during the first days of January. A shortage of freight cars forced the Sakhalin Steamship Company to take railroad ferries out of operation. Ten ballast trips and seven with an incomplete load were made for this same reason on the Caspian ferry crossing between the ports of Baku and Krasnovodsk in both directions. Steps are being taken by the directorship of the ministry and the Main Dry Cargo Fleet Administration jointly with the USSR Gosnab and the Ministry of Lines of Communications to attract goods, which are additional to the planned volumes, and to accelerate their movement to the transshipment ports. As a result, an increase in the loading of the fleet was achieved in February.

The planned amount of coal, fertilizer, ferrous metals, lumber and chemical and mineral-construction goods was delivered in January. Shipments of grain cargo and ore were not satisfied only because of the shortage of goods. The favorable weather conditions and the absence of ice in the Azov, Danube and Baltic basins contributed in no small degree to the successful fulfillment of the quotas. At the same time, storms in the area of Novorossiysk and the Baltic ports disrupted the normal activity of the ports on certain days.

By insuring winter navigation in the western sector of the Arctic with the help of the powerful ice-breaking fleet, the seamen of the Murmansk Steamship Company delivered 23,500 tons of freight to Dudinka in a timely fashion under difficult ice conditions. A total of 30,000 tons of ore and products from the Noril'skiy combine was transported in the opposite direction.

In the Far Eastern basin, the crews of the tanker fleet of the Primorskoye Steamship Company fulfilled the quotas for transporting petroleum products to Magadan and Petropavlovsk-Kamchatskiy.

The seamen of the tanker fleet of the Novorossiysk Steamship Company fulfilled their obligations for delivering crude oil from Novorossiysk to Batumi for the oil refineries of Georgia. More than 1.4 million tons of different liquid freight was transported in the Caspian basin.

The quota of the first month of this year for overseas shipments was fulfilled both for dry cargo and for liquid cargo. The overall growth in overseas shipping reached 13 percent in January 1982. The majority of the steamship companies coped with the tasks assigned in this type of navigation.

A distinctive feature in overseas shipping during the first quarter was the fact that the foreign trade organizations had just concluded during this period contracts for the sale and purchasing of export and import goods. In connection with this, a shortage of goods is being experienced on certain routes. At the same time, transportation protocols are being agreed to for the shipment of goods between the USSR and the socialist countries. The participation of the steamship company representatives and ministry management in the preparation and agreement to these documents should be directed toward determining ways for the more economic delivery of foreign trade goods, their uniform submittal for shipment over the course of the year, and achieving maximum effectiveness in fleet utilization.

From the first days of January, the steamship company collectives have paid very great attention to the shipment of freight on the Cuban and Vietnam routes. All cargo, which was submitted for shipment, was dispatched to these addresses. Work on these routes has become traditional for the longshoremen and seamen of the Baltic, Black Sea, Murmansk, Novorossiysk, and Primorskiy Steamship Companies. As always, an accurate rhythm and the unconditional fulfillment of delivery periods for goods are adhered to here. A massive dispatch of raw sugar from the ports of Cuba was begun in January. The delivery of this cargo is a very important task for seamen and longshoremen during the next five months.

The shipment of planned goods between the ports of the USSR and the fraternal socialist countries was fulfilled during January, and construction goods and equipment for construction projects, which are being erected with the help of the Soviet Union, were dispatched to the developing countries. Vessels were fed to the ports of the capitalist countries within the periods prescribed by the contracts.

The steamship companies, Main Dry Goods Fleet Administration and the "Morkontenyner" All-Union Association are continuing their work to increase shipments using reinforced items -- containers and packaging. The plan for shipping goods in containers was fulfilled for the branch as a whole by 101.4 percent, and the overall volume of shipments for containerized goods was 538,700 tons and exceeds the level achieved in January of last year by 19 percent.

More than two million passengers were transported on the passenger vessels of the transport and port fleet in January.

The February plan provides for increasing shipments for the ministry as a whole in comparison with last year's period both in coastal and in overseas shipping.

Fulfillment of the Plan for Coastal and Overseas Shipping During  
January 1983 (in percent)

Shipping Companies	Coastal	Overseas
Northern	196.7	100.9
Murmansk	102.7	91.1
Baltic	---	100.5
Estonian	138.0	100.3
Latvian	122.6	95.0
Lithuanian	---	100.8
Soviet Danube	108.0	114.7
Azov	101.5	101.8
Black Sea	74.1	102.2
Novorossiysk	104.8	101.9
Georgian	83.4	125.9
Caspian	105.7	121.9
Far Eastern	123.2	102.2
Kamchatka	107.7	104.2
Sakhalin	97.8	97.8
Primorskoye	101.2	100.1
Ministry of Maritime Fleet Total	103.3	102.3

The Central Asian Steamship Company fulfilled the shipping plan for January 1983 in all types of navigation: for tonnage -- by 107.8 percent and for tonnage miles -- by 100 percent.

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## OCEAN AND RIVER

### MARITIME FLEET PERFORMANCE FOR FEBRUARY 1983

Moscow VODNYY TRANSPORT in Russian 15 Mar 83 p 1

[Article: "The Maritime Fleet"]

[Text] All steamship companies successfully coped with fulfilling quotas for overseas shipments during February. For the ministry as a whole, the plan was fulfilled by 108.6 percent, including the shipment of dry goods-- by 109.9 percent, and of liquid goods -- by 105.4. The Lithuanian, Soviet Danube, Novorossiysk, Georgian and Caspian Steamship Companies achieved the highest results. The high level of planning discipline, which was achieved by industry and the foreign trade organizations, contributed to the good work results of the steamship companies, and the volume of foreign trade cargo was completely submitted for shipment.

The work, which was performed by the Main Dry Goods Fleet Administration and the steamship companies to increase the participation of the Soviet fleet in the shipment of imported liquid goods, and the favorable navigation situation in the Baltic, Azov and Danube basins had a positive effect. Considerable work was performed by the apparatus of the "Sovfrakht" All-Union Association and its overseas representatives in chartering Soviet tonnage for the shipment of goods owned by foreigners. As a result, the planned quotas in this type of shipping were also fulfilled and over-fulfilled for the branch as a whole and for the majority of the steamship companies.

The operating subunits of the steamship companies and of the Main Dry Goods Fleet Administration devoted special attention to insuring the smooth work of the fleet by coordinating schedules on the Cuban and Vietnam routes. The shipment of imported pipes and equipment for the items of the Urengoy-Uzhgorod gas export pipeline which are under construction and the timely delivery of various goods according to mutual commitments with the CEMA countries was under constant control.

Despite the winter period, active navigation was maintained on the Danube. Additional measures, which permitted the shipment of an increased amount of food cargo -- especially, vegetable canned goods from Bulgaria -- to be assured, were undertaken. The steady and rhythmical operation of the Ilichevsk-Varna national ferry crossing was maintained. A special refrigerator fleet was regularly sent to the ports of Cuba and Vietnam for the export of citrus fruit.

Intensive work was maintained in the shipment of goods from the Baltic and Black Sea-Azov basins to the ports of the developed capitalist countries of Europe. Petroleum, petroleum products, liquified gas, automobiles, cotton, sawn timber, and iron and manganese ore were delivered in a timely fashion by Soviet seamen. Metals, pipes, equipment, chemical goods, and food commodities were exported in full measure in the opposite direction.

The liner fleet, which carried out the shipment of foreign trade and foreign charter goods on permanent routes, made a considerable contribution to satisfying the planned quotas. At the same time, the specialized vessels which were engaged basically in liner navigation, were not always used with the required effectiveness. Demurrage contrary to the prescribed periods was allowed in Soviet and foreign ports. The directors of the steamship companies and ports and the subunits of the "Morkonteyner" All-Union Association must devote more attention to this fleet and use it for those cargoes and on those routes where the achievement of high currency results is assured.

Based on work results for two months of the first quarter, all steamship companies except the Murmansk one are outstripping the plan for overseas shipments. It is necessary for the leadership of the Murmansk Steamship Company to overcome the lag in March so that the unconditional fulfillment of all planning indicators will be achieved for the quarter based on results.

For the ministry as a whole, the February plan for the coastal shipping of goods by the transport fleet was fulfilled by 99.3 percent. Within this, the quotas for shipping dry goods were over fulfilled and a lag in liquid goods was permitted. The best results in this type of shipping were achieved by the Latvian, Black Sea, Novorossiysk, and Far Eastern Steamship Companies. The collectives of seven steamship companies -- the Estonian, Azov, Georgian, Caspian, Kamchatka, Sakhalin, and Primorskoye -- did not cope with the February plan.

The main reason was the incomplete submittal of the planned volume of goods for shipment. In connection with this, approximately 6,000 tons of different goods were not delivered on the ferries of the Estonian Steamship Company, 22,000 tons of grain and 29,000 tons of ore -- on the vessels of the Azov Steamship Company and 76,000 tons of petroleum cargo -- in the Caspian basin. The Sakhalin Steamship Company did not fulfill the plan in view of the difficult ice situation in the port of Vanino. This considerably complicated the movement of sea ferries according to schedule and caused an above-the-norm accumulation of freight cars on the Far Eastern Railroad. The Georgian and Primorskoye Steamship Companies permitted an extremely insignificant lag within the limits of 1,500 tons of petroleum cargo.

For the ministry as a whole, grain commodities, coal, ores, chemical and construction material, ferrous metals, and lumber were fully delivered. Primary importance was given to the shipment of Food Program goods. More than 400,000 tons of grain commodities alone were dispatched in February to designated ports.

The shipment of coastal goods in the Far East basin -- to Sakhalin, Kamchatka and Magadan-- was under constant control. More than 1,150,000 tons of different cargo were dispatched to these remote regions from the ports of the maritime province in sea-going vessels.

Despite a certain lag in coastal shipments, the plan for the two months was fulfilled for the ministry as a whole during February. However, the collectives of the Black Sea, Azov, Georgian, and Sakhalin Steamship Companies are lagging behind in this type of shipping.

For the branch as a whole, the plan for shipping goods in containers was fulfilled by 105.4 percent during February. The overall dispatching of containerized goods reached 559,000 tons, more than 75 percent of them were sent overseas. Basically, the steamship companies coped with the assigned tasks. However, such companies as the Soviet Danube, Azov and Sakhalin did not fulfill the assigned plans. The Baltic, Black Sea and Far Eastern Steamship Companies performed the largest volume of shipments in containers. In doing this, the Far Eastern people maintained an identically high level of container shipments both overseas and coastally.

The overall volume of shipments of goods in packaging and on pallets was 995,000 tons during February. The Northern, Baltic, Soviet Danube, Black Sea, Caspian, and Far Eastern remain the leading steamship companies in this type of shipments.

More than 1.9 million passengers were transported on the passenger vessels of the transport and port fleet during February in all sea basins.

**Fulfillment of the Plan for Coastal and Overseas Shipping During the Two Months of 1983 (in percent)**

<b>Shipping Companies</b>	<b>Coastal</b>	<b>Overseas</b>
Northern	276.7	103.7
Murmansk	103.1	98.8
Baltic	--	101.8
Estonian	111.9	102.0
Latvian	137.1	102.7
Lithuanian	--	113.3
Soviet Danube	113.0	119.4
Azov	95.9	105.8
Black Sea	88.3	103.6
Novorossiysk	106.0	106.3
Georgian	90.4	124.3
Caspian	100.3	128.8
Far Eastern	124.8	102.0
Kamchatka	100.5	110.5
Sakhalin	96.7	101.0
Primorskoye	100.4	100.2
Ministry of Maritime Fleet Total	101.3	105.3

The Central Asian Steamship Company fulfilled the shipping plan for the two months in all types of shipping: in tonnage -- by 109.4 percent, and in tonnage-miles -- by 100 percent.

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## OCEAN AND RIVER

### SOVIET OIL TANKER TAKES ON GRAIN IN FRANCE, SAILS FOR ODESSA

Moscow VODNYY TRANSPORT in Russian 4 Jan 83 p 1

[Article by E. Lisogor, captain's aide aboard the "Boris Butoma": "For the First Time in Rouen"]

[Text] After unloading petroleum in Yugoslavia, the tanker "Boris Butoma" unexpectedly received a radiogram directing it to sail for France and take on grain in the port of Rouen and an additional load in Le Havre. Taking advantage of the high tide, the tanker reached Rouen in 7 hours via the narrow Seine.

Our arrival aroused great interest of the port's specialists and city residents. It was reported in French newspapers and television. Some delegations and tour groups visited our vessel. During an official reception at the port's administration, Capt G. Sazonov expressed thanks for good pilot conducting and rapid mooring at the quay. The Rouen commission capriciously inspected the holds before loading and accepted them on the first presentation. A great merit in this belongs to the crew who were able to prepare the holds for grain in one week and, above all, to supervisors in charge of preparing the holds. Among them are senior mate G. Prostakov, senior mechanic V. Gladchenko, boatswain N. Vats'ko, fourth mechanic Yu. Kondratyev and engineman-electric welder V. Polchaninov.

Loading of the "Boris Butoma" proceeded rapidly. Work began at 0700 and ended at 2000 hours. The watch was carried out precisely by second navigator V. Yematin, V. Lar'kin, V. Makrausov and others.

It was discovered that port workers have a short workday on Saturday and are off on Sunday, so it became clear that loading will have to continue on Monday. Capt G. Sazonov then proposed to the management of the port and the elevator that an additional several hours be worked to complete loading the tanker.

The Frenchmen understood our request. All loading work was completed ahead of time by 1830 hours on Saturday. After taking on an additional load in Le Havre, the vessel left for Odessa. It immediately sent a radiogram to the Odessa port stating that the Novorossiysk seamen are challenging port workers to socialist competition for unloading the valuable cargo ahead of schedule. The tanker was unloaded ahead of schedule on 26 December.

## OCEAN AND RIVER

### PLANS FOR RIVER PORT CONSTRUCTION HIGHLIGHTED

Moscow RECHNOY TRANSPORT in Russian No 1, Jan 83 pp 37-39

[Article by Prof. V. Gurevich, Dr. of Tech. Sci., Deputy Director of Giprorechtrans [State Institute for Planning on River Transport]: "New Ports: Construction Projects for the Five-Year Plan"]

[Text] During the Eleventh Five-Year Plan, construction of ports and docks has been developed extensively on the waterways of the Russian Federation in accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers "Measures for Development of River Transport in the Years 1981-1985." More than 7500 meters of dockfront should be built in the ports of Minrechflot [(PSFSR) Ministry of the River Fleet], including mechanized docks for all-purpose supply depots and about 12,000 of docks for enterprises and the organizations of other departments.

Particular attention is being devoted to development of docks in the oil and gas regions of Tyumen Oblast. The ports of Surgut and Tobol'sk, which have played an important role in supplying small-scale oil and gas industries and pipelines which are under construction with pipe, materials and equipment, continue to be developed.

The Tobol'sk River Port, which handles more than 1.25 million tons of piece goods for the northern regions every year, is the largest water transport center in the central Irtysh waterway. It was in this very port that for the first time in Siberia docks were constructed to handle the oversized and heavyweight freight (with a mass of more than 600 tons) for a petrochemical combine. With the construction of the port to take place under difficult conditions, the dock structures were designed using thin-wall reinforced concrete designs, a fact which permitted a savings of more than 2,000 tons of scarce metal. The results of a study of these designs confirmed the advisability of their application in the harsh northern climate zone. In particular, they have already been used in construction of the mechanized docks at Sergino, the start-up complex of which, a single dock, will be placed in operation during the 1983 navigation period, and the complete facility will be finished by the end of the Eleventh Five-Year Plan. Mechanized docks at Nizhnevartovsk with dockfront length of 608 meters; Labytnangi, with 490 meters; Urengoy, with 522 meters and Nadym, with 969 meters, will also be placed in operation.

The port of Nadym, which Giprorechtrans is designing to handle the diverse freight associated with the industrial development of mineral developments in Medvezhiy, is another large port under construction in the northern part of Tyumanskaya Oblast. The port consists of two regions, the left-bank region with 6 docks and the right bank with 4 docks which are laid out in harbors. Ships arriving on their last trips can remain here for winter repair. The cargo docks are equipped with 35 portal cranes, of which 7 have a capacity of more than 16 tons. Well-organized and equipped facilities for repair of machinery and equipment, equipment for comprehensive fleet maintenance and buildings for the port workers are planned for the port. In the planning stage, much attention was devoted to environmental protection, and this fact was evident in the design: a dock is being constructed for collection of sewage and dry rubbish, there are purification structures for processing domestic-fecal wastes and a rainwater sewer system with purification structures is also called for. An ASU [automatic control system] for the primary port activity was worked out by the designers in collaboration with the Northwest Steamship Company's computer center.

A large set of scientific-research projects were carried out by Giprorechtrans during the construction period with the goal of testing a number of engineering decisions (the reliability of compensators on tie rods, the manner in which recesses are covered with water to the top of the walls, the effect of low temperatures on forces in embankment components) which the designers will subsequently be able to use in regions with a harsh climate (at air temperatures of -50° C and lower). By the 1983 navigation period, 3 of the port's docks, and the necessary equipment, will be placed in service.

The port of Yamburg, which should handle more than 300,000 tons of bulk freight, fuel and lubricants and equipment during the short Arctic navigation period (90 days) is being designed within inordinately short deadlines and under particularly difficult conditions on the Tazovskiy Peninsula of the Gulf of Ob in the mouth of the River Nyud'-Mongotoyopoko.

The Giprorechtrans collective is doing the design work at the same time they are making the engineering surveys. The port design and blueprints for the primary structures (the dock embankments, the approach canal and the water landing area) were completed in 1982.

The port includes 7 docks, the water landing area and an approach canal which are being erected above the permafrost. To insure the stability of the dock structures, the undercrane track and the stacks of cargo, it is necessary to keep the foundation soil frozen since should they thaw out due to solar radiation and the relatively warm mass of the water in the water landing area, the soils loose their load-bearing capacity due to their high ice content. To this end, thermal siphons that assure intensive freezing of the soil during the winter, have been designed beyond the dock structures and over the entire territory of the port so that the ground will not thaw out during the summer. It is planned for refrigeration equipment to be hooked up to the siphons in the summer to preserve the frozen ground. These design decisions required complex thermal engineering calculations which were performed by

Giprorechtrans in creative collaboration with Mintransstroy's [Ministry of Transport Construction] TsNIIS [Central Scientific Research Institute for Transport Construction] on a hydraulic integrator. It is being planned that significant work to develop the frozen ground at the water landing area will be done by dredges from Minrechflot's [Ministry of the River Fleet] 'Glavvodput' [Main Administration of Waterways and Hydraulic Structures].

A line of radio relay communication about 600 kilometers long is specified to insure constant communication between the port of Yamburg and the river steamboat company. This line will cross the Gulf of Ob and reach Salekhard along its uninhabited left bank, where it will connect into the common communications system for the steamship company. The first docks and the approach canal should be ready to receive ships by the 1983 navigation period.

It is planned by the decree of the CPSU Central Committee and the USSR Council of Ministers "Measures to Develop River Transport in the Years 1981-1985" to shift transport of 5.5-7 million tons of Kuznetsk and Karaganda hard coal from the railroads to river transport.

The water transport conveyor which starts up in Kambarka-on-Kama is being called upon to carry out a significant portion of these shipments. 3.9 million tons of Kuznetsk coal can be delivered by river vessels to Kambarka to the Moscow Southern Port and to the ports of Vazhiny-on-Svir' and Gor'kiy, which will release about 2,000 rail cars to convey other freight. The Vazhiny coal processing complex and the first unit of the Kambarka port are already under construction and will go into operation during the current five-year plan.

The Kambarka port is interesting because of its design decisions, and it may serve as a prototype for many river ports designed for coal processing in the future. The transshipment complex (the first unit), the productivity of which is 2500 ton/hour, consists of a single dock equipped with 8 self-propelled loaders, equipment for warehouse mechanization (3300 meters of conveyor lines and 2 universal scoop-loaders, and 2 rotary car dumpers. A ship can thus be loaded in less than 3 hours. The entire complex is automatically controlled, and the loaders are situated along the length of the dock. They can extend their booms, thus providing automatic stowage of the coal; the car dumpers' system of automatic devices to push the car in, uncouple it and remove it afterwards eliminates the use of manual labor. Domestic universal scoop-loaders will be utilized at the coal storage facilities of Kambarka port for the first time in our country. A stacker & rotary excavator have been combined into a single implement.

Special dock bollards are planned with the aim of reducing the time needed to bring up ships for loading. This will permit a ship waiting to be loaded to stop directly in back of one that is being loaded.

The technical and economic indicators of Kambarka port are, as calculations show, are as follows: production costs for transshipment of freight will be

reduced by 12 percent and labor productivity will be increased by 25 percent as compared with fixed standards; a savings of R 12.7 million (as compared with the costs for direct rail shipments) will be realized when the freight load is shifted to river transport.

In addition to the efforts of the builders (Volgodongidrostroy trust of Mintransstroy) a great effort will be required on the part of the enterprises manufacturing non-standard equipment to insure start-up of the first unit of Kambarka port. The enterprises of the Kama Steamship Company should manufacture the framework for the transporters, the SSRZ [Shipbuilding and Repair Yards] imeni III International, the transferring units; the LIVT's [Leningrad Institute of Water Transport] Experimental Plant, the loading machinery and the TsPKB [Central Planning and Design Bureau] Experimental Plant, the equipment for pushing the rail cars into the car dumpers, uncoupling them and removing them. The collectives of these enterprises bear a great responsibility for the timely fulfillment of these orders.

Construction of the second unit of this port, which will increase freight turnover to 6.5 million tons of coal, is planned for the following five-year plan in connection with the high efficiency of Kambarka port and the completion of construction of the first unit. A significant part of this coal will be received by the port planned for construction at Kalyazin (on the Uglich Reservoir) and being developed by Giprorechtrans.

When the Nizhnekamskoye reservoir is filled, the port for the Kama Motor Vehicle Plant will go into operation, one of the largest ports for an industrial enterprise. A number of its docks are already in operation, it will transfer more than 1.7 million tons of freight, including more than 1 million tons of sand for casting operations and 0.2 million tons of motor vehicles and engines. A tetrapod breakwater that protects the expansive water landing area and provides safe harbor for ships when there is turbulence on the reservoir is of interest.

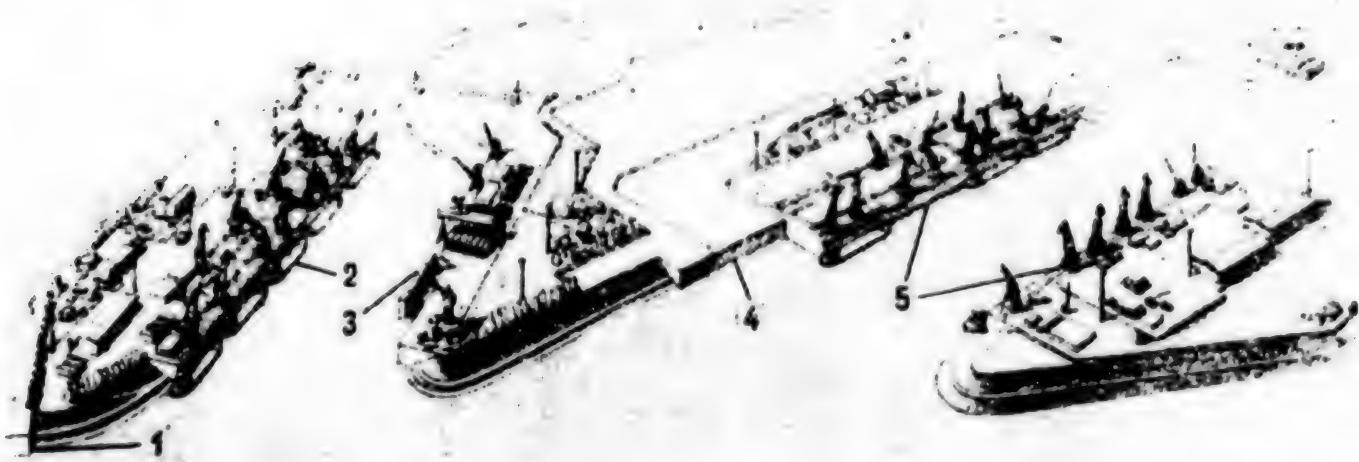
In 1983, a dock for transfer of oversized and heavy-weight equipment for the "Atom-mash" plant in Volgodonsk will go into use. The dock is equipped with 2 cranes with a lifting capacity of 630 tons each. They are situated so that when working together they can transfer equipment weighing 1200 tons.

River transport is called upon to play an important role in providing transport services for the USSR Food Supply Program adopted at the May (1982) Plenum of the CPSU Central Committee. In particular, it is planned that a number of docks be put into service for transferring agricultural products and freight for the sectors connected with agriculture. More than 10 docks should be built during the Eleventh Five-Year Plan in the Astrakhan region (in the Volga delta) for unloading tomatoes, melons and other agricultural production in containers and on pallets. Seven docks have already been built, and 6 should be placed in service in the near future, their development already being completed. Development of the docks and the fruit and vegetable center of Kur'yanovo, which supplies Moscow and Moscow Oblast with vegetables, is completed.

In 1981 a dock was put into operation for transferring apatite concentrate in Astrakhan. The dock has a freight turnover of 400,000 tons and it is equipped with a clamshell-bunker loader and a new high capacity (500 tons/hour) rotor-conveyor loader developed at Lengiprorechtrans [Leningrad State Institute for Planning on River Transport]. The apatite is then transferred to mineral fertilizer plants at Sumgait and Nevinnomyssk.



1. Overview of Nadym Port (model)



2. Future development of the port of Tobol'sk (model)--

1. Dock to receive waste waters from ships;
2. Docks for transferring various cargos;
3. Docks for transferring heavyweight loads;
4. Freight docks;
5. MRF [Ministry of the River Fleet] docks

Docks should be built in the near future on the river Buzan for transferring the equipment and building materials (in the amount of 1.25 million tons) for the Astrakhan plant under construction to produce the raw materials for mineral fertilizers.

The immense significance of river transport and port construction in particular, to the development of the national economy of our country is clearly visible from the given incomplete list of ports and docks that will be going into operation during the Eleventh Five-Year Plan. It is a matter of honor for the developers, builders, scientists and operators to include the ports and docks among those already active and to incorporate their production capabilities as early as possible.

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## OCEAN AND RIVER

### HARNESSING WIND POWER MAY AID SHIPS IN CONSERVING FUEL

Moscow MORSKOY FLOT in Russian No 2, Feb 83 pp 50-51

[Article by V. Khudin, B. Zakharov and G. Kudrevatyy of the Leningrad Central Planning and Design Office and V. Korobitsyn, mechanic-tutor of the Latvian Steamship Company: "The Wind Still Can Work"]

[Text] During the past several years, the Leningrad Central Planning and Design Office [TsPKB] has been conducting work aimed at reducing the use of fuel by vessels. One of the ways for solving this problem is by creating vessels which use wind power for their movement. A possibility is being examined at the present stage of creating a wind propulsion device which could be used together with the main engine and thus reduce the expenditure of fuel.

During the past several years, specialists of various countries have recommended many ways of using wind power on vessels. Their basis, as a rule, was the most simplest and ancient propulsion device--the sail, which despite being subjected to various modifications remained essentially the same sail with all its characteristic shortcomings. Due to its rather low efficiency, a great sail area is required as well as extensive expenditure of hard and at times dangerous manual labor. Taking these circumstances into consideration, the Leningrad Central Planning and Design Office began developing new systems of aerodynamic propulsion complexes [ADK] of increased efficiency. Structurally, the aerodynamic propulsion complex combines a Flettner rotor, which was created in the twenties, with a rigid or semirigid wing.

In 1980, a model of such a propulsion device successfully passed laboratory tests in a wind tunnel of the Leningrad Water Transport Institute. During the test, a model of the aerodynamic propulsion complex, in the form of a rotatable rotor connected to a rigid wing, was subjected to circular air blasting as a result of which the most efficient sectors of its operation were established.

The test results have indicated that the aerodynamic characteristics of the aerodynamic propulsion complex, i.e. its lift and resistance coefficients, considerably exceed those that can be obtained of ordinary wings or sails. Calculations have confirmed the expediency of experimentally testing the aerodynamic propulsion complex under natural conditions on a series tanker of the "Altay" type with a deadweight of 5,000 tons. A tanker is a more suitable type of vessel for this purpose because installation of additional propulsion device structures on it does not hinder normal cargo-handling operations. An installation consisting of two aerodynamic propulsion complexes of the two-rotor type with a semirigid wing and using an ordinary cloth sail as its basic component

was adopted. In this case rotors are located near the side edge of the sail and have cone fairings along their entire height, which can be used to take in the sail that is located between the rotor fairings. The sail can be taken in by winding it on one of the drums located inside the rotor fairings. The total sail area of both aerodynamic propulsion complexes (together with rotors), which was adopted for the "Altay" type tanker, is nearly  $300 \text{ m}^2$ .

This design does not differ in principle from the tested model, is much simpler structurally and provides broader opportunities for studying the work of the complexes under natural conditions.

The complete evaluation of such complexes as applied to the "Altay" tanker has indicated a much higher efficiency as compared to the separated Flettner rotors as well as to the sail equipment of the Dinarig type, which was developed in the FRG in the late sixties and has gained such wide renown. The estimated propulsion of the aerodynamic propulsion complex is based on the work of only two of the four available rotors. However, even in this case the complex's propulsion is more than two times greater than the propulsion of the Dinarig type sails.

The average amount of useful propulsion of the propulsion devices for the "Altay" tanker, which was obtained from the vessel's five basic routes as regards the wind with its speed of 10 m per second, is 4.2 tons. This means that under combined work of the aerodynamic propulsion complex with the main diesel engine and the vessel's speed of 15 knots, the power of the latter can be reduced by roughly 0.55 megawatts (750 horsepower) which is nearly 26 percent of its rated power. This makes it possible to economize nearly 126 kg of fuel per hour, with its relative consumption of 168 g/l/s. x hour, for a 5DKRN55/110 engine. With the tanker's operational period of 340 days, of which 240 days are sailing time and the working time of the aerodynamic propulsion complex at the indicated speed reaching 50 percent of the travel time, the annual saving of fuel equals nearly 380 tons. The expenditure of power for the rotation of rotors, which amounts to approximately 11 horsepower, is insignificant and practically does not effect the load of the ship's power plant.

For an "Altay" type tanker with the ratio of the vessel's displacement to the sail area being 24.1 tons per  $\text{m}^2$  and the installation on it of two aerodynamic propulsion complexes with an overall area of  $300 \text{ m}^2$ , the gain in power will amount approximately to 1.14 megawatts (1,550 horsepower), i.e. nearly 54 percent of the main diesel engine's power. In other words, without operation of the main diesel engine and with the screw rotating freely, an "Altay" type tanker can develop a speed of nearly 11 knots under full load.

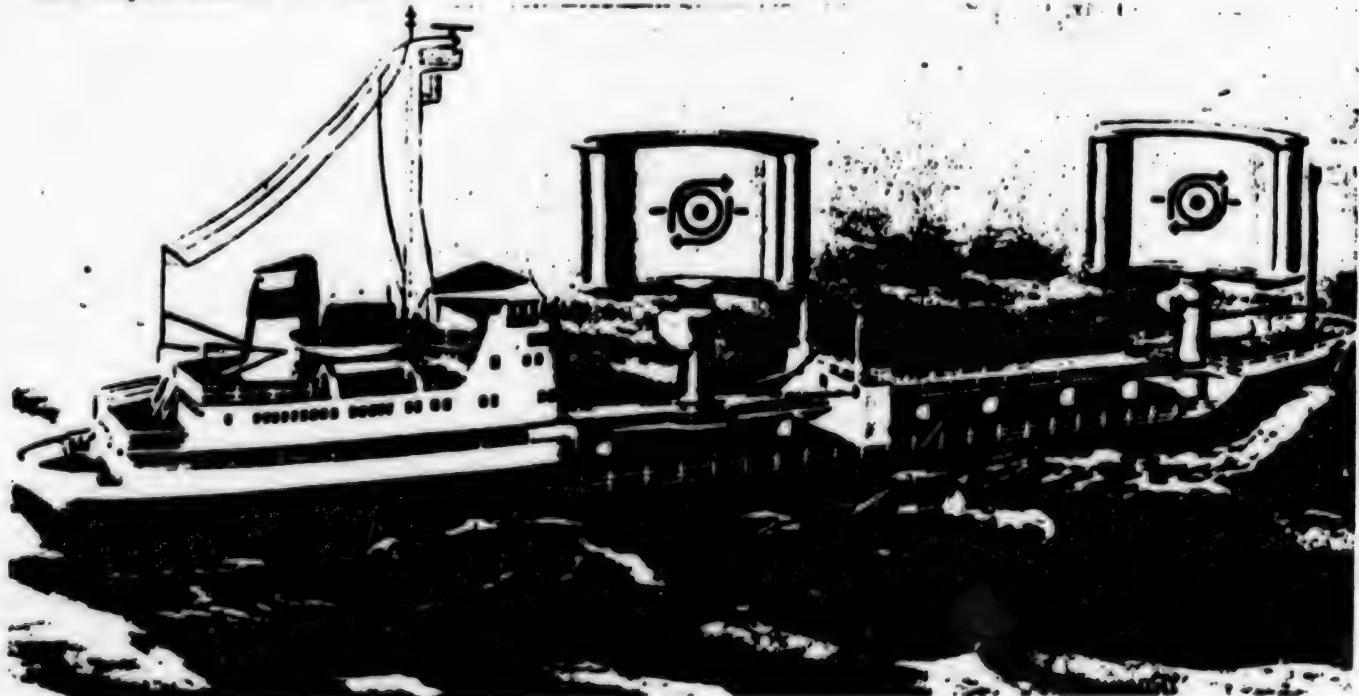
A feature of the auxiliary wind propulsion devices is that they are turned on when the vessel already has a certain speed, i.e. it is already being effected by the so-called "course wind." In this connection there is a reduction in the relative bearings of the apparent wind and also a change in its speed: in adverse relative bearings the speed of the apparent wind always exceeds the speed of true wind and it is the other way around during tail wind. Since propulsion of the wind propulsion devices depends directly on the speed and

direction of the apparent wind, then taking into consideration the noted peculiarity it may be concluded that the use of auxiliary wind propulsion devices is basically expedient when the speed of the true wind exceeds the speed of the course wind (i.e. the speed of the vessel) and also when relative bearings of the true wind correspond to the tail and similar winds. This places a special requirement on the auxiliary wind propulsion device--it must develop a sufficiently high propulsion during a comparatively low speed of the apparent wind. This requirement is met by rotor wind propulsion devices whose lift coefficient is not constant and increases with the rise in the relative peripheral velocity of the rotor. Therefore in maintaining a constant number of the rotor's rotations, selected according to the greatest speed of the wind, the propulsion of the propulsion device will not drop so sharply in the event of reduction in this speed like that of the sail whose propulsion changes proportionately to the square of the apparent wind's speed.

To evaluate more completely the expediency of using auxiliary aerodynamic propulsion complexes on vessels, an estimate was made of the tanker "Altay's" work on three routes: Ventspil-Bremerhaven (824 miles long), Ventspils-Havre (1,142 miles) and Ventspils-Lisbon (1,986 miles). Moreover, three stages of using the aerodynamic propulsion complex in travel time were adopted for comparison: 30, 50 and 70 percent of its duration. The extent of capital expenditures for production and assembly of an aerodynamic propulsion complex on a vessel was determined on the basis of existing sectorial norms and amounted to R52,000.

Depending on the time and route of aerodynamic propulsion complex utilization, the recovery period ranges from 1.2 to 4.8 years. The minimum annual effect under similar conditions ranges from R4,000 to R34,000.

Therefore, installation of aerodynamic propulsion complexes on an "Altay" type tanker is an effective measure, which makes it possible to considerably reduce the expenditure of fuel.



The plan for equipping an "Altay" type tanker  
with an aerodynamic propulsion complex

## OCEAN AND RIVER

### WORK ON NEW SEGMENT OF CANAL IN UZBEKISTAN

Moscow PRAVDA in Russian 21 Jan 83 p 1

[Article by S. Yezhkov, Uzbek SSR: "An Explosion Constructs the Canal"]

[Text] A peaceful explosion broke the silence of the Karakum sands. It resounded in the Alatskiy Rayon of Bukhara Oblast where a new section of one of the largest mainline canals in Uzbekistan -- the Amu-Bukharskiy-- is being built.

Until recently, the Karaulbazarskiy massif in Bukhara Oblast was an enormous expanse of arid sands. It was decided at the end of the last five-year plan to open up the virgin lands here. The collective of the "Bukharairsovkhозstroy" Trust was faced with developing 80,000 hectares of land here and constructing 16 sovkhozes on them which would in the future annually produce 160,000 tons of cotton. Water was brought to the fields from the Amu-Bukharskiy Canal. However, it was not enough -- based on present yardsticks the carrying capacity of the water artery was small. As a result, the yield of the agricultural crops suffered. Two new, recently constructed farms harvested only 17 quintals of cotton per hectare last year. The question of expanding and reconstructing the canal arose. However, how to do it in the shortest time?

The route of the new channel extended almost 30 sandy kilometers. Here and there, even the "Uazik" cross-country vehicle skids. There are people and equipment everywhere. The bulldozer and power shovel operators of PMK-42 of the "Bukharairsovkhозstroy" Trust -- the general contractor -- are performing cutting operations on the eighth kilometer, clearing a path for the thousands of people. The fact of the matter is that they are building the new channel in hachures as they call the method of the national construction site in the republic. All the farms of not only Bukhara Oblast but also of the neighboring Navoi and Kashka-Darya Oblasts have sent their representatives here.

Tens of thousands of people are engaged in one construction project. The impression can be formed in the reader that the building of the channel is being conducted using the so-called grandfather method.... by no means. Although hoes and shovels are still required, they are not used to dig the channel -- they are only used to work the borings for the explosives.

V. Guzalov, the chief of the Main Administration for Rural and Kolkhoz Construction Affairs "Sredazspetsstroy" Trust's SPMK-5, says: "Yes, we are building the new section with the help of pin-point blasting. We have such experience. However, a new technology will be used -- the ejection of earth will take place on both sides of the route. That is why little work will remain for the bulldozer and power shovel operators after us."

... The first explosion sounded. Others will ring out after it.

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## OCEAN AND RIVER

### GREATER EXPLOITATION OF INLAND WATERWAY SHIPPING URGED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 28 Dec 82 p 2

[Article by I. Kapuler, chief of the technical section of the Ministry of Transport Construction's Main Administration for the Construction of Maritime and River Facilities: "Why There Is Little Cargo on the River"]

[Text] Look at a map of the country. Twelve seas wash the shores of our state. Deep rivers are marked with wide blue ribbons. Nature has not endowed any other country in the world with such a gift of waterways. If you only take into account the internal navigable main waterways, their extent in our country is more than 142,000 kilometers. The knowledgeable reader probably remembers that this is approximately the overall extent of our railroads. The length of both is identical, but the return is different: the monthly freight turnover of railroad transport is often greater than the annual one on the rivers.

Is such a comparison, however, lawful? Is it conceivable to transport on the rivers as much freight as is now moved over steel trunklines of the same length? World experience shows that under certain conditions waterways may even be more preferable in this sense. It is possible to cite the example of the United States: on the average, the freight turnover per kilometer of internal navigable ways there is 3.3-fold greater than the freight turnover per kilometer of the railroad network. Of course, it is necessary to consider here that our railroads are operated many-fold more intensely than the American ones and that we have a shorter navigational period for river transport.

Nevertheless, the reserves for expanding water transport are enormous. Under the present rather strained situation in transport, river transport workers are capable of considerably relieving the country's railroad network. That is why the question of "maximally shifting, where this is advisable, the transportation of goods from railroad to river transport..." was raised during the 26th party congress. An extensive program for the development of maritime shipping was also outlined.

An important part in the solution of this complicated task is the construction of moorings and ports. The volume of construction and assembly work for river transport workers will grow 1.5-fold during the current five-year plan when compared with the previous one.

The main direction in construction in maritime transport has once and for all become the building of powerful transshipping complexes which are specially designed for the types of cargo. These are highly mechanized and even automated works with depths near the moorings of up to 18-20 meters. In the future, it is necessary to construct more than 100 and to reconstruct about 60 complexes designed for working with nearly 100 million tons of cargo.

Just as throughout the world, we are constructing moorings in many cases out of special rolled steel pilings -- so-called sheet piling. The deeper it is near the moorings, the stronger the sheet piling must be. Meanwhile, the metallurgists are delivering to us sheet pilings whose bearing capacity is threefold-fivefold less than that required for modern moorings. Moreover, it is made from low quality metal which is unsuitable for hydrotechnological construction, especially under northern conditions -- and we are building primarily in Siberia and in the Far East. This question is so important that the development of new sheet pilings was included in the state-wide plan for new technology. The Dneprodzerzhinskiy Metallurgical Plant imeni Dzerzhinskiy (its director is K. Nosov) was required to provide the first batch of this product this spring and to deliver 45,000 tons of the new types of sheet piling in 1985 (work on the creation of a new type was begun during the 9th Five-Year Plan). However, nothing has been positively done yet -- there are only volumes of correspondence with the Ministries of Ferrous Metallurgy of the Union and the Ukraine. At first, the metallurgist cited the fact that there was no suitable rolling mill in the plant. Our ministry's developmental engineer institute changed the configuration of the sheet piling section in such a way that it was possible to roll the metal on the existing mill. New excuses, however, appeared. Most likely, the USSR Ministry of Ferrous Metallurgy sees as before its main task to be the output of as large as possible a tonnage of metal and not of a highly economical type.

From the state point of view, it should be necessary to act just the opposite. Do you see what is now happening? As the sheet piling is rather bad, the hydraulic builders must erect an additional bearing wall made out of reinforced casings. There is a double expenditure of material because of this, not to mention the double expenditure of labor. We ask the supplier: Give us less metal, but provide that which is needed. On a country-wide scale, thousands and thousands of tons of rolled steel could be saved by only using new sheet piling.

There is another problem. The need for a qualitative improvement in the technical equipping of the builders has matured.

The maritime builders recently completed the construction of the port of Vostochnyy in the Maritime provinces. It is located in a bay which is exposed to rough seas. Here, floating cranes were not able to work even with ripples after a wind. An hour of idle time of a giant like a 100-ton floating crane is not cheap. Several installations are three kilometers from the shore in the Novotallinskii port which is now being built. A small surge on the sea-- and work was stopped. A way out was found: Maritime self-rising platforms, not unlike those which, for example, the Caspian oil workers have been using for a long time, but which are much simpler and of smaller sizes, are needed. One

platform like this would replace a whole caravan of the traditional floating mechanisms and would decrease construction time twofold at a minimum. It is necessary, however, to speak in the subjunctive mood: would replace, would decrease -- although the Ministry of Shipbuilding Industry has mastered the output of extremely more complicated platforms for drilling and for the mining of mineral resources from the bottom of the sea. It seems that the shipbuilders should be able to satisfy our order without any special difficulties, the more so since this subject has also been included among the most important state tasks for new equipment.

An extensive program for improving port construction has been compiled in the branch. However, this is already our concern. The solution of the two questions, which have been mentioned here will depend on cooperating branches. If we manage to arrange the output of platforms and of new sheet piling, our native port construction will have taken a large step forward.

The tasks of the 11th Five-Year Plan are unusually strenuous ones. The transport builders and the hydrotechnicians are ready to fulfill them, and they will unconditionally fulfill them if they are not distracted from their work. Here is one example which will make everything clear. We are building a large timber port in the Far East Bay of Plastun. The planning bodies have required us to also construct housing for the customer. V. Isayev, first deputy chairman of the USSR Gosplan, made this decision at the suggestion of the construction section and the construction industry. It is possible to understand the Gosplan specialists: They wanted to avoid departmental "gaps" by entrusting the installation in the complex to one organization. It did not turn out this way, however. They did not cut the knot but only tied it. In this kray, our branch does not have a base for housing construction, but there is a housing construction combine of the Ministry for Construction in the Eastern Regions of the USSR literally 70 kilometers from the port. We get the panels there. However, they release them to us, the "foreigners", last. It is the same story at the port of Sergino which is being built in western Siberia. The central board of the Ministry of Transport Construction -- the Main Administration for the Construction of Maritime and River Facilities -- which specializes in hydroequipment, annually commissions approximately 200,000 square meters of housing. We must expend much more effort to carry out this work than the specialized trusts do in constructing housing. It would be reasonable to transfer this work to the general construction ministries.

In accordance with the instructions of the 26th CPSU Congress, a long-term complex program for the development of transport is being developed in the country. This was reflected in the recently adopted decree of the CPSU Central Committee and USSR Council of Ministers on improving the planning of transport's work. The need to more effectively use the material and technical base and to insure the development of the carrying capacities of all types of transport during the elaboration of plans, was once again emphasized in the directive. In realizing this decree, we think that a significant role will be played by the construction of ports and moorings. This is one of the most long-range and economical directions in transport support during the present and future five-year plans.

OCEAN AND RIVER

LARGE, SEAGOING AIR-CUSHION PLATFROM TESTED

Moscow SOVETSKAYA ROSSIYA in Russian 12 Jan 83 p 6

[Article by Ye. Goloshumov: "On Land, Like on Water"]

[Text] A seagoing air-cushion platform with a carrying capacity of 40 tons has been built for the first time in world practice.

It was created by shipbuilders of the Layskiy Ship Repair Plant of Arkhangelsk Oblast in cooperation with designers of the Tyumen Affiliate of the All-Union Scientific Research Institute of Petroleum Machinery [Neftemash] and the Lenin-grad Central Designing Bureau of the USSR Ministry of the Maritime Fleet. At same time, Northern Steamship Company specialists B. Kobylin, V. Lobanov and V. Frolov designed a twin-screw manuevrable amphibious tugboat, which was built successfully at the Arkhangelskiy Order of the Red Banner of Labor "Krasnaya Kuznitsa" Plant. USSR Minister of the Maritime Fleet T. B. Guzhenko participated in the first tests of the unusual seagoing "duet" on Severnaya Dvina.

The final test was held in the Barents Sea. The first batch of cargo from the motorship "Belomorskles" was placed on the platform and the cross-country tug-boat hauled it in shallow water toward the shore. The shore is behind, tundra lies ahead.

After covering 3 miles of the Khaypudyrskaya Inlet, the platform, which was hauled by the tugboat, appeared to be sailing above land. It was in this manner that 1,500 items of cargo, including machines, drilling equipment, residential houses, building materials and steam boilers, were delivered to the storage area of the Amderminskaya Petroleum Prospecting Station's new watch sector...

The seagoing air-cushion platform and the powerful amphibious tugboat now make it possible for Arkhangelsk seamen to deliver cargo to most remote places along the seacoasts in the Arctic without coastal transshipment, which wasted much time.

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## OCEAN AND RIVER

### NEW RO-RO VESSEL FOR BALTIC STEAMSHIP COMPANY

Moscow VODNYY TRANSPORT in Russian 15 Jan 83 p 4

[Article by VODNYY TRANSPORT correspondent V. Yeliseyev: "The First Miles"]

[Text] On 23 December, the USSR state flag was hoisted on the motorship "Georgiy Pyasetskiy." The ro-ro type vessel was added to the Baltic Steamship Company and entered its port of registry for the first time few days ago.

The coal harbor. The tall, huge vessel with its sparkling freshly painted sides and superstructures was at quay No 102, which is normally used by vessels to unload large diameter pipes brought from European ports.

The motorship "Georgiy Pyasetskiy" is named in honor of a man who devoted many years of his life to the development of our country's maritime fleet.

With the arrival of this vessel in Leningrad, the Baltic Steamship Company now has nine large ro-ro type vessels under its jurisdiction.

It is truly a very large vessel, as tall as a 10-storied house. Here are some of its basic measurements: length is 182 m, height from keel to pilot house is 29 m and draught is more than 9.6 m. The oceanic giant can take into its hold with horizontal loading-unloading method and onto the upper deck up to 18,000 tons of cargo. The vessel's multideck superstructure has only four double-occupancy cabins, other seamen live in single-occupancy ones. The vessel has an area set aside especially for a reading room, a sports hall, a swimming pool and a rest area...

Its maiden voyage was a short one: Gdansk-Bremen. The mooring time will be even shorter as the vessel is due to leave on another voyage in 2 more days.

The vessel's senior mate V. Nefedov said that the vessel was built by Polish shipbuilders of the Gdansk Shipyard imeni V. I. Lenin.

One year ago the collective of that shipyard marked a distinctive labor and international jubilee: the jubilee vessel was built there on order from the Soviet Union.

Viktor Sergeyevich recalled the words spoken there in Gdansk by Andzej Gawenda, chief builder of the vessel:

"The Soviet Union is our reliable partner in CEMA, and Polish shipbuilders are glad that economic cooperation between the USSR and the Polish People's Republic [PNR] is developing and strengthening."

"When we arrived at the Bremen roadstead for large diameter pipes for the Urengoy-Uzhgorod main gas pipeline," the senior mate continued, "the elements gave the crew and the vessel their first serious durability test. The wind reached hurricane strength and even after gradually releasing the entire anchor chain it was difficult to keep the vessel on an even keel with the heel reaching 20 degrees. We were forced to sail for the open sea and weather the storm out there."

"The vessel has good maneuvering qualities, good stability," said Capt A. Leonov, who joined the conversation. He will mark his 40th anniversary of working in the Baltic Steamship Line [BMP] this year. He advanced from a seaman to captain. "The average operational speed is 19 knots," Anatoliy Grigor'yevich said, "but the main engines, the Polish-built diesels can develop a speed of up to 21 knots in practice..."

The motorship will operate on the Australian route in the future.

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CSO: 1829/172

## OCEAN AND RIVER

### TALLINN PORT CONSTRUCTION FACES DELAYS

Tallinn RAHVA HAAL in Estonian 2 Mar 83 p 2

Article by Toomas Tallo: "Sand Problem Tends to Hamper Building of Tallinn New Port"

Text Rows of dump trucks roll to the site of the Tallinn new port at Muuga Bay, hauling limestone and fill dirt. The dyke that cuts off an area of a couple of hundred hectares (to be filled with dredgings from the bottom of the bay and later to serve as site for harbor construction) was finished late last year. So where are these trucks going now?

"We are beginning to build the breakwater to protect the harbor; it will be more than three kilometers long," explains Viktor Yessakov, site supervisor for the 423rd construction administration of the main contractor, Baltmorgidrostroy. "Also, even though the area near the shore will be basically filled with dredged sand, we also need fill dirt to prepare sites for buildings and other construction. And we need lots of it."

The harbor builders exceeded the 1982 construction plan of three million rubles by more than a million rubles. The current plan amounts to 5.3 million rubles. According to the site preparation contract work must be done for the foreign firm that will construct the harbor buildings, dredgings in the bay must continue, the area behind the dyke must be filled and the breakwater built, and the in-house base must also be broadened—the concrete mixing station must be put in action, as well as cement storage, maintenance shop together with personnel facilities, storage for keeping material, electrical lines, branch railways into the harbor area... Almost a quarter of the work planned for January went undone. The work has been greatly hampered by stormy weather. Even last year the dredgers fell behind schedule, since the dredgers had to stay for weeks tied to the piers because of high waves. In January a storm wrecked the pier and so the dredgers had to leave Muuga Bay altogether for some time. In the months ahead everything must of course be done to make maximum use of favorable weather and to speed up the dredging operations.

Along with the dredging work the filling of the bay area designed for harbor construction also slowed down. In order to speed it up the volume of fill dirt hauled from afar should be increased. Currently some 30 trucks are

hauling limestone from various places and fill dirt from the Vao quarry, but the builders think that there should be more dump trucks in use.

But an increase in dumpsters will not be enough to solve the problem of fill dirt hauling. The problem is that large amounts of sand are also required to build the 6-kilometer segment of railway from Muuga station to Maardu (this is being done by the 675th construction-installation train), as well as for laying the foundations of the railway branches within the harbor and for the piers. The ESSR Construction Materials Ministry is able to supply the required quantities of sand only from the Pannjärve quarry in Kohtla-Järve rayon; from there it is hauled by railroad to Maardu station and then with dump trucks to the site.

Both the railway line to the port as well as the branches within the harbor area are scheduled to be completed by 1 July so that they can be used for hauling materials and installations. Sand is also needed to prepare construction sites for buildings. So the hauling of sand determines greatly the site preparation prepared for the second half of the year, and in final analysis the startup of the entire year's intensive construction program. With this in mind a meeting was held in early January in the Estonian Railway Administration; senior officials of all concerned organizations attended and measures were designed to assure sand supply for port and railway construction. A plan was approved according to which the 675th construction-installation train would receive 185,000 cubic meters of sand over the year, and the 423rd construction administration 250,000 cubic meters, with both receiving 70,000 cubic meters each in the first quarter. But the sand being hauled now is sufficient only for building the Maardu-Muuga branch railroad (rails have been laid along one-third of the way), while the 423rd construction administration has not received a single cubic meter to build roads and other edifices within the port area, and so the building of railway sidings inside the harbor has not even begun, and the preparation for other construction in the port area is also slowing down.

#### When will the sand reach the harbor?

The Estonian Railway Administration assured us that the volume of sand could be increased if only the other participants would meet their obligations. According to the decisions of the meeting the ESSR Construction Materials Ministry was to put an additional two bulldozers and an excavator to work in the Pannjärve quarry, and to requisition railway cars to haul the required amounts of sand. The ministry now stated that beginning 1 March the amount of sand that could be hauled would be doubled, i.e., the quantity would meet the needs of the builders. The ministry has received the required rail freight allocation.

Georg Kaleviste, chief of production of the ministry, said, "We are only waiting for the Estonian Railway Administration to fulfill its promise made at the same meeting and to lengthen the railway siding to the Pannjärve quarry by about one-half kilometer. The Ahtme Construction Materials Combine finished the roadbed last year, but the rails have not been laid. Without this railway we cannot expand loading operations sufficiently."

The unloading of sand cars has not been solved. An unloading site and machinery to unload the wagons mechanically are needed. The 675th construction-installation train has the required equipment at Maardu station, but an unloading of sand for the harbor builders there was deemed to be impossible. But the solving of this problem should not be impossible, since both organizations are part of the USSR Transportation Construction Ministry.

But Andrey Ivanov, chief of the 423rd construction administration, said, "Receipt of sand is no concern of ours. The unloading should be done by the Construction Materials Ministry that is charged with supplying the site with required amounts of fill. They must build and equip the unloading site."

Endel Luik, chief of the transportation department of the ESSR Construction Materials Ministry replied, "Our task is the production, loading and dispatch of the materials. We have never been involved with unloading."

Who is then to receive and unload the sand? Should another meeting be called to solve that question? In one way or another, the sand problem requires a rapid solution. Delays are no longer possible, they would threaten the entire year's construction plan.

In the article "Keep up Champion Speed" (RAHVA HÄÄL, 26 Dec 82) the environmental problems of the Tallinn new port builders were touched upon—the warmup rooms were without electricity, since the substation and the line could not be joined to the net because of intra-agency communications problems. Now there is electricity at the site, but the environmental conditions cannot be called good by any means. There are few warmup rooms and even in the existing ones only clothes can be changed and hands washed, the workers are hauled to lunch at Kallavere, and this means a loss of work time. Means must be found to improve working conditions. This too is a task that must be solved without delay.

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CSO: 1815/20

## OCEAN AND RIVER

### BRIEFS

**NEW CASPIAN FLEET TRAWLER--Klaypeda**--Klaypeda ship builders have begun series construction of a new type of trawler. "Moryana" is the name of the lead boat of a series of "extra" class trawlers intended exclusively for catching sprat in the Caspian Sea. As distinct from other vessels, the "Moryana" requires neither nets nor trawl lines. According to the conception of the Leningrad designers, suction pumps serve to catch the fish. The pumps work in tandem with search lights so as not to destroy the fry of valuable types of fish. It has been proven that electric light attracts sprat but frightens away sturgeon. The new vessel has improved equipment for on-board processing of the catch. The shipbuilders of the Klaypesa Shipbuilding Plant "Baltiya" also introduced a number of innovations. They built the prow and stern of the first "Moryana" separately, but at the same time. Then they joined them together and welded them. This separate assembly method and other innovations permitted construction time for the new series lead trawler to be reduced by about one month. As the conclusion of the commission of experts appointed by USSR Minrybkhoz [Ministry of the Fish Industry] attests, the "Moryana" passed the test set up for it by fishermen of Astrakhan'. The greater speed, modern fish locating equipment and high degree of mechanization of fish processing procedures are noted among her other advantages. [By I. Kasyukov] [Text] [Moscow IZVESTIYA in Russian 5 Jan 83 p 3] 9194

**EXPORTS TO IRAN UP--Baku**--In December of last year, the steamships "Poet Sabir," "Marshal Vorob'yev," "Vagif," "Murgab," "Shamkhor" and others exported more than 90,000 tons of export and transit goods from the port of Baku to the ports of Iran. This figure is twice the monthly norm. This is the first time this level has been reached. [Text] [Moscow VODNYY TRANSPORT in Russian 11 Jan 83 p 1] 9194

**DOCK WITHOUT CRANES--Leningrad-TASS**--The new deep water dock at the Leningrad Maritime Port is designed for loading and unloading large tonnage vessels. This structure, which is more than 300 meters long, is intended to handle ships using horizontal cargo handling. The construction of new docks and the renovation of old ones is being performed on the basis of a comprehensive program for modernization of the Neva [River] harbor. Each year its handling capacity grows; now more than 4,000 ships under flags from many nations of the world are moored here for navigation. The new dock complexes and highly efficient loaders help to accelerate their handling. [Text] [Moscow VODNYY TRANSPORT in Russian 13 Jan 83 p 4] 9194

**CENTRAL ASIAN STEAMSHIP AUTHORITY EFFICIENT--Chardzhou--**The collective of the Central Asian Steamship Authority began the third year of the five-year plan in an organized manner. Recently the steamships "Velikiy Oktyabr'," "Vladimir Ul'yanov," "Kiev" and "Astrakhan'" departed Termez for Afghanistan with barges loaded with fuel and diverse equipment in tow. All of the trips were completed ahead of schedule. There is great excitement at the Karakum Canal imeni V. I. Lenin these days. The crew of the steamship "Aktivist," headed by V. Dzhumaniyazov, delivered 600,000 tons of mineral and construction cargo from Zakhmet to the builders of the Zeidskoye reservoir ahead of schedule. A Grishchenko's combined, enlarged brigade is successfully performing high-speed handling of ships and railroad cars. The brigade collective is meeting the shift norms at a rate of 120-130 percent. [By A. Abramtsev, senior economist of the Central Asian Steamship Authority] [Text] [Moscow VODNYY TRANSPORT in Russian 15 Jan 83 p 4] 9194

**NEW CONTAINER PORT--Riga--**The container terminal complex under construction for the Riga Maritime Trade Port has started to operate on Kundzin'sal Island at the mouth of the Daugava River. The hydraulic engineers have erected a one and one-half kilometer dock equipped with powerful container loaders and portal cranes. More than 800,000 tons of containerized freight will be handled here annually. [Text] [Moscow VODNYY TRANSPORT in Russian 15 Jan 83 p 4] 9194

**NEW VOSTOCHNYY PORT DOCK--**A new dock, the fifth in number, has been built at the highly mechanized Vostochnyy Port, the largest in the country. Its job will be the handling of bulk cargos as well as metal constructions. The port's handling capacity will now be increased by 200,000 tons of cargo per year. Construction of a plant for repair of international class large tonnage containers has also been started at Vostochnyy Port. Many departments have an interest in this construction. Good container quality permits sea, rail and truck transportation to be improved and handling operations to be accelerated. In Vostochnyy Port, the expanded brigade of longshoremen-machinery operators headed by Genrikh Ivanovich Mileyko is considered one of the best. Month in and month out, this collective exceeds production quotas, and does not permit waste in its work. [Text] [Moscow VODNYY TRANSPORT in Russian 20 Jan 83 p 1] 9194

**CONTAINER TERMINAL COMPLETED--Vostochnyy Port, Primorskiy kray (TASS)--**Construction of the territory for the container terminal for the port's new dock has been completed. It is one-quarter kilometer long. Each dock in the port has its own specialty. On one they load coal, on another, lumber and wood chips. The new dock has its own "profession" too. Ships with containers will be handled here. Full automation of the handling operations, provided by computer, will permit a ship to be handled in 10-12 hours. Three heavy freight container carriers can tie up to the dock at the same time. With start-up of the second section of the deep-water Vostochnyy Port, the harbor will be able to handle 17.4 million tons of cargo per year. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 23 Jan 83 p 1] 9194

CSO: 1829/157

## MISCELLANEOUS

### TRANSPORT CONSTRUCTION MINISTRY MEETING REVIEWS 1982 PERFORMANCE, 1983 PLANS

Moscow GUDOK in Russian 4 Feb 83 p 2

[Article: "Carry Out Construction Quickly, Economically and with High Quality"]

[Text] As already reported in GUDOK, an expanded meeting of the board of the Ministry of Transport Construction and of the Presidiums of the Central Trade-Union Committee of Rail Transport and Transport Construction Workers and the Central Trade-Union Committee of Motor Transport and Highway Workers was held on 28 January.

The minister of transport construction I. D. Sosnov gave a report on the results of work during 1982 and measures to guarantee fulfillment of the 1983 plan according to the tasks ensuing from the decisions of the November (1982) Plenum of the CPSU Central Committee, provisions and conclusions contained in the speech of General Secretary of the CPSU Central Committee Comrade Yu. V. Andropov at this plenum.

The reporter noted that the transport builders fulfilled the annual plan of construction and installation work in 1982 both by the general contract and through their own efforts and solved the main problem--they turned over the main production capacities and facilities provided by the national economic plan for operation.

The plan for putting new railroad lines and second tracking into operation and electrification of railroads and their equipment with automatic blocking devices, central dispatching and a number of other facilities. The plan for turning over housing was overfulfilled, including that for railroad workers and transport builders.

The task on construction of the Baykal-Amur Mainline Railroad was implemented successfully. The Urgal-Postyshevo line went into permanent operation on the eastern section of the BAM.

A total of 16 leading collectives were awarded the challenge red banners of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Central Committee of the Komsomol for achieving high results in the All-Union Socialist Competition in honor of the 60th anniversary of the founding of the USSR.

At the same time, the minister noted that there were significant deficiencies in work during 1982. A number of locomotive and rail car facilities was not turned over for operation and the tasks for development of a number of junctions and stations and construction and reconstruction of plants for repair of rolling stock were underfulfilled.

The plan of construction and installation work was underfulfilled by 4 percent for the Ministry of Railways in 1982. A number of trusts, having coped with the general plan of contract work, did not fulfill the tasks for facilities of MPS [Ministry of Railways]. The same is true with the plan of construction and installation work for the USSR Ministry of the Maritime Fleet, the RSFSR Ministry of the River Fleet and the Ministry of Civil Aviation.

A great deal of attention was devoted last year to development of the production base of the construction organizations. However, some trusts did not assimilate funds for these purposes.

The managers of the main administrations, associations, trusts and construction administrations, which did not guarantee realization of the tasks for putting production capacities and plans of construction and installation work into operation, were subjected to sharp criticism in the report. This is related primarily to neglect in management, insufficient level of labor and production discipline, weak introduction of leading production processes and progressive structural members and materials and to poor use of construction equipment and transport facilities.

At the same time, it was noted that the extensive shortfalls in delivery of rolled metal, new rails, cement and other materials had a significant effect on the work of many organizations. Serious difficulties were also experienced in material and technical supply due to unsatisfactory support of construction projects and enterprises with rolling stock. At the same time, many rail cars were also not utilized through the fault of the construction organizations and enterprises.

Last year, the task for increasing labor productivity in transport construction was not fulfilled and an advance in the growth of the average wage compared to an increase of labor productivity was permitted. Some trusts reduced the volume of work completed compared to 1981. Insufficient attention is being devoted at these trusts to introduction of an effective form of organization of labor--the brigade contract--and losses of work time due to idleness, loafing and absence from work with authorization of the administration were high. The plan for output of precast reinforced concrete structural members, brick and wall materials was also underfulfilled.

It was emphasized in the report that the most serious attention should be devoted to increasing the quality of construction and of the product produced.

In speaking about the work plan of the ministry for 1983, the reporter noted that the transport builders are faced with crucial tasks. New rail lines and second tracking must be put into operation, a number of railroad sections must be converted to electric traction and must be equipped with automatic blocking and central dispatching devices and docks, subway lines, paved highways and other facilities must be constructed.

The leading collectives of transport builders have already entered a socialist competition for successful fulfillment and overfulfillment of the 1983 tasks.

M. M. Borodanov, manager of the Tyumenstroyput' Association, V. V. Alekseyev, manager of Mostostroy Trust No 5, A. M. Savchuk, manager of Tselintransstroy, A. I. Kasparov, manager of the Zapsibdorstroy Association, S. S. Kolokol'tsev, manager of the Mostransstroy Trust, V. G. Nazarenko, manager of the Transelektromontazh Trust, S. S. Kuleshov, manager of the Baltmorgidrostroy Trust, A. S. Kaygorodov, manager of the Krasnoyarsktranstrom Trust, deputy minister K. V. Mokhortov, chief of Glavbamstroy, D. I. Fedorov, direction of the All-Union Scientific Research Institute of Transport Construction, and others participated in the discussion of the report.

The speakers touched on a number of problems that require immediate and well thought-out decisions. Thus, for example, the fact that many local divisions of Stroybank frequently drag out the deadlines for the beginning of construction for any formal reasons was discussed. Cancelling of the "windows" aroused much criticism of the builders. Only 33 "windows" with total duration of 77 hours of 180 "windows" (360 hours), required for installation of windows were made available throughout the Tselintransstroy Trust during 25 days of January alone. The request to MPS that the "windows" were postponed in the schedules and that no one had a right to change them had a negative effect in this regard.

Some construction organizations are still weakly mechanized. And the builders sometimes deprive themselves of that which they had for unexplained reasons. Thus it happened with the good size KM-15 crane. It was taken out of production for some reason and production of the KDE crane was begun, which is less reliable and does not guarantee the traffic safety of trains on the adjacent track during electrification.

The board of the ministry and the presidiums of the central trade-union committees noted in their decrees measures to correct the existing deficiencies and to increase work efficiency and quality for fulfillment and overfulfillment of the planned tasks and of the qualitative indicators in 1983.

The managers of the main administrations, associations, trusts, construction administrations and trade-union committees were entrusted with working out and implementing specific measures to guarantee rhythmic operation of the organizations and enterprises by turning attention toward strengthening labor and executive discipline and increasing responsibility for entrusted matters. One of the main tasks of the main administrations, associations and construction trusts and administrations is timely introduction of production capacities and facilities into operation. Special attention should be devoted to fulfillment and overfulfillment of the plans of construction and installation work established for 1983 and introduction of production capacities and facilities into operation for rail, maritime, river and air transport and also the production base of the construction organizations.

The board of the ministry and the presidiums of the central trade-union committees expressed confidence that the transport builders, having widely

organized their socialist competition, will apply all effort, knowledge and experience to fulfill and overfulfill the planned tasks for 1983 and for implementing the decisions of the 26th CPSU Congress.

Member of the Politburo of the CPSU Central Committee, first deputy chairman of the USSR Council of Ministers G. A. Aliyev gave a talk at the session.

K. S. Simonov, head of the Transport and Communications Department of the CPSU Central Committee, N. S. Konarev, minister of railways of the USSR, T. B. Guzhenko, minister of the USSR Maritime Fleet, A. D. Dmitriyev, deputy head of the Construction Department of the CPSU Central Committee, L. V. Bagrov, minister of the RSFSR River Fleet, A. I. Nazarov, first deputy minister of USSR Civil Aviation, V. Ye. Biryukov, deputy chairman of USSR Gosplan, and other responsible workers of the CPSU Central Committee, USSR Council of Ministers, USSR KNK, ministries and agencies participated in the work of the board.

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## MISCELLANEOUS

### TRANSPORTATION DEVELOPMENT IN WEST SIBERIAN OIL REGIONS

Moscow NEFTYANIK in Russian No 2, Feb 83 pp 10-12

[Article by A. Chudinovskikh, Giprotyumenneftegaz]

[Text] The share of transport expenditures in the oil-producing regions of Western Siberia now reaches almost 40 percent of all expenditures for development and exploitation of its natural resources. Transport expenses are transferred in the final analysis to the cost of the oil and gas produced. The fraction of transport expenses throughout the country as a whole comprises 10-12 percent in the total social product. What has caused this divergence in the structure of expenditures of the entire national economy of the country and Western Siberia? Can such a high fraction of transport expenses in Western Siberia be explained by the fact that other operations are less expensive in these regions compared to the central part of the country? On the other hand, if one compares that the cost of construction work (with subtraction of the transport component) and the this work, including drilling, comprises 80 percent for Western Siberia, it turns out that it is also 1.5-fold higher here than in inhabited regions. Consequently, the fourfold excess of the share of transport expenses in the total product created in Western Siberia, compared to a similar indicator for the country as a whole, is explained by factors related to the high cost of the transport process itself.

Construction of highways, railroads and paved airfields in Western Siberia is threefold more expensive and sometimes even more than in the central region of the country. Construction of dirt roads on wood slabs that serve as access routes to clusters of wells can sometimes be tenfold more expensive than roads in inhabited regions.

The severe climatic and complex engineering and geological conditions, the swampliness of the terrain and the large number of lakes, the developed river network and the vast floodplains and permafrost all make construction of transport facilities more expensive.

Perhaps construction of capital type transport structures in these regions should be rejected in favor of natural waterways and railroads? Calculations show that the use of seasonal types of transport (river and winter) causes additional national economic losses, related to storage of goods and creation of essentially year-round reserves of material values. These losses depend

not only on the storage periods but also on the cost of the goods: the higher their price, the greater the losses. The losses may even exceed expenditures for delivery of the goods from the most remote regions of the country to the most remote fields. The use of winter facilities requires 10-12-fold more operating time of motor vehicle equipment compared to its operation on major highways. The delivery of goods by sea from Murmansk to Novyy Port is no less expensive than air transport over the same distance.

Thus, despite the significant increase in the cost of transport facilities, the construction of paved highways and mainline railroads in Western Siberia is still more effective when compared to other solutions.

However, seasonal types of transport--river and sea--still comprise the basis of the transport system and more than half of the length of highways comprises winter road conditions. Intraregional shipments are usually carried out on a chain of several types of transport and the number of transloading operations is approximately double here than throughout the country as a whole, which results in an even greater increase of expenditures for delivery of goods and passengers.

During the 11th Five-Year Plan, the need of the Western Siberian Oil and Gas Complex (ZSNGK) for rail and motor shipments will increase twofold, while the need for river and air shipments will increase 1.5-fold. During this period, approximately 150 million tons of goods, of which one-third is designated for enterprises of Minnefteprom [Ministry of the Petroleum Industry], must be transported to regions of the Tyumen Arctic. External transport of goods to these regions is accomplished mainly by rail and river transport and the proportion of haulage, despite the annual introduction of new railroads into operation, remains the same and comprises 1:1 (this is explained by the insufficient capacity of the railroad tracks compared to the rapidly increasing volumes of freight shipments).

The need of ZSNGK for material and technical resources should increase sharply in the future, which in turn requires a further proportional increase of the capacities of various types of transport. Therefore, the search for economic solutions directed toward reduction of specific consumption of raw material, materials, the total weight of structural members, machines and mechanisms in all sectors, related to development and exploitation of the region's natural resources, is of principle significance to increase the functional efficiency of the transport sectors in Western Siberia.

The advanced development of transport is of special significance to the ZSNGK, as for all regions being developed. Solution of this problem is one of the main prerequisites for harmonious development of all other sectors in the region. A lag in development of transport may have a negative effect on the rates of development of the sectors and on an increase of the effectiveness of economic assimilation and use of labor resources and may be a delaying factor in development of the region's productive forces as a whole.

Not one kilometer of paved highway was constructed prior to the beginning of development of the oil and gas fields in the ZSNGK zone. With regard to

railroads, there existed the two Tavda-Sotnik and Ivdel-Ob timber-hauling railroads. But they played no appreciable role in development of the oil-fields of Western Siberia since they were remote from them. Only the rivers and winter roads were used exclusively during the first phase of development of the oil fields. The circumstance that the fields were discovered in the floodplains of the Central Ob River and its tributaries or in the immediate vicinity of them also contributed to this. The Samotlor, Fedorov and other fields, somewhat remote from the rivers, then began to be developed, which required urgent organization of year-round communications with them.

At the same time, debates proceeded among the specialists. Some supported the idea of constructing narrow-gauge railroads, assuming that they were relatively less expensive. Others suggested that a branch system of navigable canals be developed, which could be used as temporary highways during the winter season. The opinion was advanced that year-round highways must be constructed. There are no deposits of materials for construction of pavement under the specific conditions of the oil-producing regions, where there are no high-quality construction soils, and design-engineering solutions of reinforced roads were advanced: dirt roads on wooden slabs and capital type roads of prestressed concrete slabs welded to each other.

The vigorous rates of development of the ZSNGK caused a lag of development of transport behind other sectors of the region. Introduction of the Tyumen-Surgut Railroad was delayed for 10 years compared to the beginning of development of the oilfields, although the feasibility of constructing this main-line was proved long ago, even before oil was discovered in Western Siberia.

Highway construction was also delayed. The shortage of paved highways at the beginning of the 11th Five-Year Plan comprised approximately 700 km, although construction of them is characterized by rather high rates (the volume of work has approximately doubled during each five-year plan).

The lag of transport construction with respect to drilling and development of oil and gas fields results in significant losses of funds due to additional expenditures for transport under off-road conditions and also due to under-utilization of roads constructed later (after all, the freight traffic volume drops sharply after development of the fields). A shortfall in delivery of goods (up to 10-20 percent by river transport and up to 10 percent by rail transport) is noted due to a lag in development of transport, although the situation with outside hauling has improved somewhat on the whole.

A fundamental improvement of transport servicing of the regions of the ZSNGK is related mainly to the problem of creating a strong mainline transport system, the basis of which should consist of the railroads and highways being constructed here.

The turning point in road construction in Western Siberia was the decree of the CPSU Central Committee and the USSR Council of Ministers in 1980, according to which the annual volume of construction of improved roads should comprise 800 km. We note for analysis of the scales of the posed task that 1,300 km of these roads were constructed during the entire period of development of the Tyumen Arctic, including 1980.

The efforts of a number of union republics have been recruited to fulfill this task, which in turn poses new problems in coordination of the work, organization of the road construction process and support of construction with the necessary resources, while the workers recruited from other union republics are being supported with all needed everyday living conditions.

A typical feature of this decree is the complex approach to solution of the transport problem of Western Siberia. A system of interrelated measures with address notification to each executor has been proposed for the first time in the road construction of Western Siberia.

The result of bureaucratic delays and one-sided views in solution of important national economic problems is known to everyone. With regard to transport, bureaucratic delays are manifested in the desire to have one's own docks, highways, airfields and one's own rolling stock, although construction of them and acquisition and maintenance are frequently incredibly expensive.

The correct and perhaps the only method is to intensify the specialization of production, which inevitably causes concentration of funds and individual functions in a few hands. This makes it possible to achieve an increase of labor productivity, to reduce sharply the cost of the produced product and services rendered and to increase their quality. Specialization generates a complex of problems related to cooperation of organizations.

The requirement that diverse economic links be established and making them more efficient begins to contradict the management of economic systems and specifically these links. Narrowly specialized production becomes more dependent on the outside environment, i.e., on the suppliers of raw materials, semifinished products and on the consumers of finished products and services. A breakdown at one point may cause breakdowns through all links of the chain.

To solve these intersector problems, economic science has recently advanced the specific program approach as a tool, the essence of which includes planning on the basis of the final goals of social development and working out special planning documents--complex economic programs.

Production and construction programs arouse the greatest interest among specific programs. How is this explained? The fact is that the most complex problems arise in construction and in development of the new rather than in continuation of that begun. The term "production and construction program" emphasizes that the saving from implementation of the construction program can be determined only by the saving of future production created due to implementation of the construction program.

Production and construction programs are directed toward creation of an aggregate of enterprises or other production facilities. Thus, the majority of construction programs in the new regions are production in nature.

The general plan for development of production and construction programs consists of a number of sequential plans. The final goal of the program as a special document is development of specific technical and organizational measures interrelated to each other by the deadlines for completion and by the consumed resources, with the tasks being assigned to specific executors.

Essentially, the development of transport in the oil-producing regions must now be planned as a regional production and construction program.

The network of paved highways and dirt-wood plank roads must be expanded and a large number of paved takeoff-landing strips and helicopter pads must be constructed in the oil-producing regions of Western Siberia. Many docks will be constructed, including those on small rivers. With regard to development of rail transport, main support will be directed in the foreseeable future toward construction of access tracks to the docks, production bases and industrial enterprises. Construction of dead-end sidings and station tracks will be continued at all existing stations.

The need for development of transport and consequently for capital investments will be high as before. However, the structure of expenditures will be changed and, namely, reconstruction of transport structures will require an ever greater fraction of capital investments. According to forecasts, these expenditures will begin to outstrip the expenditures for new transport construction within 10 years, although the volumes of transport construction will increase from year to year. Problems of increasing the life of transport structures under conditions of Western Siberia begin to acquire special significance in this regard.

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## MISCELLANEOUS

### CEMA MEETING REVIEWS LONG-TERM TRANSPORTATION DEVELOPMENT PROBLEMS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 8 Feb 83 p 3

[Interview by A. Stroganov with R. Stavrovski, chief of CEMA Sec.ariat's Transport Department: "Transport in CEMA Countries"]

[Text] The 105th meeting of the CEMA Executive Committee held in Moscow reviewed a progress report on the implementation of the long-range target program of cooperation (LTPC) in developing transport links.

[Question] What role does transport play in developing cooperation between CEMA countries?

[Answer] The rapid growth of external trade in CEMA countries would, of course, have been impossible without a corresponding development of every type of transport in the fraternal countries. After all, their requirements in many types of goods are satisfied mainly through reciprocal deliveries. This way they get almost all the natural gas they need, 95 percent of their coal, 82 percent of the coke and iron ore, 70 percent of the oil. Each year sees an increase in deliveries of machinery and equipment, chemicals and consumer goods.

Over the years there has been a marked change in the structure of freight traffic. In 1950, 90 percent of all cargoes were carried by rail, today the figure is down to about half. Oil for the CEMA countries of Europe used to be carried in railroad tank cars, at the present time it is transported by pipeline. As a matter of fact, pipelines account for about 30 percent of all reciprocal deliveries. In third place is maritime transport whose share in overall freight turnover has grown from 7 percent to 20.6 percent in 1980. In the five-year period ending in 1980 most of the increase in reciprocal shipments is attributable to pipeline and maritime transport.

To satisfy the economically well-founded needs of the CEMA countries in reciprocal freight and passenger traffic a long-range target program for developing transport links was drawn up.

[Question] How is it being implemented?

[Answer] At the CEMA Executive Committee meeting it was pointed out that the CEMA countries are conducting large-scale technical reconstruction of all types of transport and incorporating the most advanced technological processes into production.

In railroad transport the goal is to modernize 18 of the most important trunk lines of international significance. This will allow the weight of freight trains to go up to 4,000-4,800 tons and their speed to 100 kilometers an hour. A common freight car yard now numbering over 300,000 units is functioning smoothly. The yard is responsible for cutting down on idle trips by rolling stock and substantially slashing expenses.

In the field of water transport I must make special mention of the international shipping company "Interlichter" established by Bulgaria, Hungary, the USSR and Czechoslovakia. This is a concern with full cost accounting, and the experience it has gained can be utilized by other associations created by the CEMA countries. The firm has at its disposal 200 lighters, 2 towboats of the "Julius Fucik" class and 1,500 heavy-load containers. The towboats carry cargoes between Danube ports and ports in Vietnam, Kampuchea, Malaysia, India and Pakistan. Delivery time has been cut more than half, a substantial number of freight cars needed, above all, for transporting goods to seaports has been freed.

Neither can we omit mention of the Varna-Il'yichevsk ferry, an advanced technological complex successfully mastered by Soviet and Bulgarian specialists. Between 1979 and 1982 the volume of traffic on this line increased substantially, with an ensuing reduction in delivery time. The proven advantages of this type of transport are such that another ferry line is to be established--between Klaipeda (USSR) and Sassnitz-Muckran (GDR) on the Baltic Sea.

A good example of multilateral cooperation in the field of automobile transport is the ongoing implementation of contracts to develop and reconstruct four international highways in CEMA countries in Europe with an overall length of about 9,000 kilometers. Also contemplated is the creation of joint lines to carry international freight and the organization of new international bus lines.

In civil aviation there is cooperation between CEMA countries in the form of joint exploitation of some international lines. Currently being carried out are flights linking Sochi and Simferopol' with Berlin, Budapest, Prague and Bratislava, Tbilisi with Varna, Tumen' with Sofia. Preparations are afoot to put jointly-operated jumbo planes into service on some lines. Much is being done to make wider use of automated systems to regulate air traffic.

Because container traffic is so cost-effective their volume is to be increased about 2.5 times in 1985 and 4 times in 1990 over the 1980 level. It is considered feasible to undertake additional measures to ensure uninterrupted reciprocal and transit deliveries, such as expanding the handling capacity of border traffic posts, more efficient exploitation of all types of transport and improving coordination of current and long-range freight-shipment plans.

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## MISCELLANEOUS

### GRAIN TRANSSHIPMENT FACES OBSTACLES AT RIGA PORT

Moscow VODNYY TRANSPORT in Russian 11 Jan 83 p 2

[Article by longshoreman I. Shashilkin, foreman, honored transport worker of Latvian SSR: "When the Indices Don't Jibe"]

[Text] Good results in the work of seaports stem in large part from cooperation between seamen and railroad workers. By coordinating our efforts with our associates to cover the entire transport junction area we have of late managed to significantly speed up ship handling and reduce freightcar downtime. At Riga piers these are now being loaded not only quicker, but fuller as well, which makes for a considerable drop in the number of cars tied up.

However, a standing reproach to dockers and particularly to teams handling transshipments of imported grain is the current level of static load. Your showing, we are told, is below the norm set by the railroad. So there is nothing to praise us for.

Let us take a look at events of 3 years ago. Like today, the port was experiencing a shortage of empties for loading. That is why a proposal put forward by team No 28, leader V. Aksiuchits, met with such a positive response. The gist of the proposal was quite simple: increase the customary load level for each type of car by an extra 2-3 tons; request the port authority to count each team's output not by way of the mean load index and the number of cars handled, as was previously the case, but to use a differential approach by crediting each team with the actual amount of cargoes processed. The idea is simple, but to implement it called for the dockers to show greater precision in their work so as to leave no "vacuum" in the cars and at the same time to avoid overloading.

The district leadership supported this initiative, and the port party committee approved it and recommended its application on a broader scale. Our team did not stand aloof either. Where V. Aksiuchits and his comrades had undertaken to free every twentieth car we decided to ready every fifteenth car for a second load. Other teams responded to our initiative: the 27th, 11th and 25th. Later on the competition was joined by dockers engaged in raw sugar transshipments. There was a growth in the prestige of capable and accurate dosage men. Their work methods were studied in the school of

progressive work experience. Our educational combine expanded its program for would-be young dockers with a course on dry-cargo dosing.

Results were not long in coming. In 1980 the port workers of Riga succeeded in freeing 1,893 transportation units for additional loading; the next year that figure rose to 2,410.

The increase in the mean static load continued through 1981 both for grain and raw-sugar cars. The railroad's target figures for this index were consistently overfulfilled but only up to September, when a precipitous drop occurred--a whole 6 tons' worth.

The so-called hopper, a low-capacity car or, in plain language, a cement car refitted to carry grain was the guilty party in undermining the very basis of docker competition and causing a sudden deterioration in their work performance. Beginning with September 1981 these hoppers accounted for one-third of all cars assigned to grain. Subsequently their share rose to 40 percent.

We are not against the railroad expanding its rolling stock. There is another cause for distress: this car's capacity is one and a half times below a normal car's, yet the target index for mean static load was reduced by only a few tons. These unrealistic norms leave people confused, disorient those who do not wish to work blindfolded, who would like to measure the results of their labors against earlier achievements.

However, all this seemingly does not count. The small-size hoppers can take on no more than 41 tons of grain, but only if the ship is unloading relatively heavy wheat. But we are all too often faced with corn and barley, and their natural weight is a whole lot less.

Our railroad associates, though, do not make any allowances. Calculations have shown that even if every small hopper, will their current capacity a fraction of that of other types of rolling stock, were to be filled to the limit with grain we would still be unable to meet the target figure for mean static load.

So the question arises: who needs such planning? Why doesn't the railroad, while acknowledging criticism directed at it, draw any conclusions from that criticism?

There's more. As of summer 1982, the piers are being provided not only with old cement cars refitted for grain, but also with brand-new cars of identical design just off the assembly line. Stenciled on their sides is: "55 cubic meters, 67 tons, Grain." Well, any literate person fully understands that the mount of produce indicated can be packed into such a receptacle only if that produce is ... cement. We get over 1,000 such cars a month.

It is not surprising, therefore, that there is no logic in the target figures for static load handed down to us by the railroad. Yet, this is one of the most important production indices the port has to meet.

At the November plenum of the CPSU Central Committee and the recent session of the USSR Supreme Soviet it was justly pointed out that the planning process must be raised to a qualitatively higher level. I have touched here on but a single aspect of the problem, but one which I think covers a lot of ground. Any planned static load should take into consideration the kind of cargo to be handled and the rolling stock's capabilities. Only then will it be a realistic assignment.

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## MISCELLANEOUS

### CARGO HANDLING CAPABILITIES IMPROVED AT MOZYR

Moscow VODNYY TRANSPORT in Russian 24 Feb 83 p 1

[Article by E. Tatur: "How Are Freightcars 'Found'?" ]

[Text] At the river port of Mozyr a new unloading mechanism to process quartzite-carrying gondola cars has been put into service. The rivermen of the Pripiat' will now be able to solve several problems at once.

First of all, there will be a significant improvement in working conditions. In the forthcoming navigation season rolling stock with cargo will be processed without any physical exertion by man whose functions have been taken over by machinery. As a result the processing period will be curtailed almost six times. Previously the quartzite was transferred aboard ship by 10-ton gantry cranes, and no matter how capable the crane operator damage to the cars was difficult to avoid. The cargo processing over, many of the cars needed to be "treated," which meant additional downtime. Finally, the unloading mechanism will enable the port workers of Mozyr to double their shipments of quartzite to the metallurgical plants of fraternal Ukraine.

The project was authored by "Ukrziprorechtrans" (Ukrainian State Institute for River Transport Designing) and built by mechanized column No 136 of the firm "Mozyrsel'stroy" (Mozyr Rural Construction).

Also aimed at improving rolling stock utilization are the activities of a specially created coordinating group headed by M. N. Bazhanov, harbormaster and city soviet deputy.

The efforts of truckers, railwaymen and river port workers who have adopted the work system initiated at the Leningrad transport junction are also yielding positive results. In the anniversary year, for example, more cargoes were processed the ship to car and car to ship way. The end result was that idle rolling stock decreased by over 10 percent against the norm, with about 300 cars being freed for other duties. This translates into many thousands of tons of state cargoes being transported over and above assignment.

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## MISCELLANEOUS

### INTERSECTOR COORDINATION PROBLEMS IN ZHDANOV AREA

Moscow EKONOMICHESKAYA GAZETA in Russian No 5, Jan 83 p 7

[Article by B. Sidorenko: "Where Sea Meets Shore"]

[Text] The progressive system of labor cooperation proposed by Leningraders has really caught on in the Zhdanov transport junction. Active here is a coordinating committee made up of representatives of the Azov Steamship Company, the Zhdanov branch of Donetsk Railroad, river shipping and automobile transport. At a theoretical and practical conference of transportation workers held here recently it was noted that cooperation has produced good results. The volume of export-import haulage increased, ship traffic intensified, freightcar turnover speeded up and many interdepartmental squabbles are being nipped in the bud.

It is noteworthy that implementation of the Leningrad project exerts a positive influence on the volume of container shipments. This is due to a master schedule which monitors the availability and probable number of approaching freightcars, the condition of the spur tracks, available capacity in port storage facilities and the deployment and movement of ships. The combined tasks are carried out mainly by unified port and station shifts. Chief of the container and packet division of the Zhdanov branch of Donetsk Railroad Ye. Vishniakov points, among other things, to the significant improvements in the container examination process before loading them on flatcars. The introduction of modern machinery has allowed the work to proceed on a 24-hour basis.

As a result container shipments increased twofold in a very short time. More mutual guarantees are being extended and trust has broadened in receiving and transferring containers.

The container hookup is attracting the active participation of river transport workers. Container ships have begun regular runs on the inland line Zhdanov-Moscow with stopovers at the major Volga ports. However, not all problems on the river lanes have been resolved: the volume of container traffic on the Zhdanov-Leningrad line has still to reach the necessary levels.

As for truckers, they are still taking almost no part in container hauling. The explanation lies not only in the absence of the necessary numbers of container trucks, but in the difference between present-day rates for container carrying. Today the truck rate is significantly higher than that in effect on the railroads. The time has evidently come for a single normative document to be drawn up. Determining the feasibility of transporting containers by truck could be entrusted to port offices of "Soyuzvneshtrans."

There are no clear haulage rules for other means of transportation as well. "Basic procedures in receiving and delivering export and import goods at railroad stations and seaports" is the only document that regulates relations between the railroads, the ports and "Soyuzvneshtrans." It went into effect in 1958 and since then has remained practically unchanged.

It is obvious, then, that in the matter of improvements in container haulage as part of the transportation process quite a few problems remain to be solved.

As for the organization of container handling in the port of Zhdanov, last year saw some positive changes occur. The metal boxes are arranged in neat rectangles. The piers look somehow more spacious, though the flow of containers has not diminished, on the contrary, it has increased.

"Coming finally onstream is another special pier which we are building with our own resources," explains deputy chief of container operations of the Azov Steamship Company A. Bel'mesov. "Over here we now handle only import cargoes. Containers earmarked for export are processed on the new pier."

The Zhdanov port authorities calculate that by 1984 they will be able to take in and ship out 300,000 tons of freight in containers. The number of container ships is growing. Of late the container fleet has been joined by such modern motor vessels as "General Gorbatov" and "Rostov-na-Donu." Each can take aboard up to 500 containers.

But it is not only the port of Zhdanov where these shipments are to be expanded. In the middle of last year the port and railroad station of Kerch were put on the list of ports and stations handling export-import cargoes in 20 ton containers. The same operations were to be organized in the seaport and station of Berdiansk, but the situation there gives no cause for joy.

"The administration of Dnepr Railroad has only slightly "opened up" Kerch station," complains deputy chief of the Azov Steamship Company A. Tsarev. "They have consented to ship out 50 containers a month. Now what's 50 containers? The motorship "Mikhail Svetlov" alone puts ashore 350 containers monthly and takes the same number aboard."

Let us acquaint ourselves with the present-day situation at the Berdiansk transport junction. It is becoming better organized all the time. Pier frontage has grown, powerful cranes have been installed and new storage facilities built. The local port workers were among the first to adopt the direct method in handling ships and railroad cars. This yields significant results.

"To get ready for container handling," I was told by harbor master N. Shaul'sky, "we outfitted a special landing stage with a fortified concrete surface (over 2 hectares). Two gantry cranes were installed there plus all the needed loaders and trailers. Another container pier was built with our own resources outside town. Three years ago we laid railroad tracks to the place."

And how did it work out? The pier is used mainly as storage space for agricultural machinery. Today the Berdiansk link in the container chain looks meager and unfinished.

The administration of Dnepr Railroad (chief A. Alimov) persists in its unwillingness to "open up" Berdiansk station for the transfer of heavy containers onto flatcars.

"We've held numerous meetings on the subject," says N. Shaulsky. "All of them ended up with the adoption of one and the same resolution: 'To be studied further.' But the business at hand moves not at all."

The railroad authorities cite as an excuse the fact that the station is not equipped for container repair. This argument is unconvincing. The Azov Steamship Company is willing to undertake for 3 years the repair of all 20 ton containers until such time as the railroad builds its own facilities.

In a word, at the transportation junctions on the shores of the Azov Sea much remains to be adjusted.

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## MISCELLANEOUS

### PIPELINE TRANSPORT DEVELOPMENT URGED

Moscow IZVESTIYA in Russian 18 Dec 82 p 2

[Article by Yu. Bokserman, doctor of technical sciences: "Materials Can Travel by Pipeline. What is Preventing Implementation of New Types of Transport?"]

[Text] "Expedite the introduction of continuous and new specialized types of transport: conveyer, pneumocontainer, hydraulic and others, especially in the mining, chemical and in building material industries." These words are written down in the Basic guidelines for the economic and social development of the USSR for 1981-1985 and the period up to 1990.

Over the years of Soviet power a comprehensive transportation system was created in our country that encompasses railroads, automobile, maritime and river transport, aviation and pipelines. The largest growth has been achieved in pipeline transportation of oil, petroleum products and natural gas.

All the traditional types of transport will continue to develop and improve. The technical level of all existing short and medium distance transport as well as transport in large population and industrial centers must and will be raised. Already now construction materials from quarries, ore, coal and other minerals are not always delivered to customers regularly and on time.

Large masses of dry cargoes are carried from quarries to processing plants or consumers by truck. Over 1.5 billion tons of nonmetallic mineral building materials alone are hauled annually from quarries.

One pressing transport problem facing large modern-day urban centers is the removal of ever-growing quantities of garbage (the figure for Moscow is close to 7 billion cubic meters) to sites where it is destroyed or utilized. The existing methods of garbage removal entail heavy manual labor and do not conform to high sanitary, hygienic and ecological standards.

That is why the scientific, design and production organizations of the Ministry of Construction of Petroleum and Gas Industry Enterprises and the State Committee for the Supply of Petroleum Products RSFSR are conducting a quest for new high-efficiency and continuous types of transport. Their efforts

have already yielded definite results. For the first time anywhere we have created several systems of industrial container pipeline pneumotransport. Its function is to move dry materials, small piece freight packaged or in bulk, residential waste and miscellaneous packaged cargoes. It has several advantages over other types: imperviousness to weather or climate conditions; relatively low energy consumption; a design principle that lends itself easily to full mechanization or automation which make for high productivity and functional dependability; cargo safety and the capability to be laid above ground, underground or on supports.

Container pipeline pneumotransport is a system consisting of pipelines in which air currents generated by blowers move laden containers, singly or coupled into trains.

Because the wheels of the containers are covered with a layer of rubber these systems boast an almost total lack of wear on the transport pipeline and noiseless operation. Tests have shown that the most advantageous average speed for the containers at minimum energy use and allowing for the rolling stock's technical capabilities is 40-45 km per hour, at which figure energy consumption is limited to 0.3-0.8 kwt-hours per 1 ton-kilometer of transportation work.

The containers move under limited pressure fluctuations--0.15 atmosphere on horizontal stretches.

Container pipeline transport systems for large masses of dry materials, residential waste and packaged cargoes are built of wide-diameter steel piping with longitudinal seams. In the future reinforced concrete piping will be used for the purpose.

Intraplant systems for transporting small, lightweight cargoes can use glass, plastic and fiberglass tubes as well as thin-plate pipes.

Air for industrial pneumotransport systems is produced by turboblowers, centrifugal superchargers, compressors and vacuum pumps; for intraplant systems--by ventilators, industrial compressed air sources and compressed air accumulators. All container-loading and unloading operations as well as traffic monitoring are carried out and controlled from a central switchboard.

In the Ministry of Construction of Petroleum and Gas Industry Enterprises all problems pertaining to new types of transport have been assigned to the production association "Soyuztransprogress" which includes among its subdivisions the research institute "VNIIPITransprogress" (director E. Olofinskiy) with a large experimental proving ground in the town of Ramenskoye, Moscow region. Here, experimental installations have been constructed that develop new designs in transport systems.

The Special Construction Bureau "Transprogress" of the Russian Federation (director and chief designer A. Aleksandrov) has a proving ground in Orekhovo-Zuyevo which is well equipped with test stands. A functioning system has been installed here where operation modes are being perfected and technological equipment tested.

Already functional in Georgia is the first stage of a pneumotransportation system called LILO-2. It is 17 kilometers long. The system's second stage is nearing completion, after which its overall length will be 43 kilometers. Traffic through the tubes will attain 2 million tons, thus freeing 400-500 heavy-duty trucks and about 1,400 drivers. Similar systems are operative in Gorky, Tula and other areas.

There are a number of intraplant pneumotransportation systems at work as well which has brought about a fundamental improvement in production conditions. A plant belonging to the Special Construction Bureau "Transprogress" is currently at work on equipment that will move books and magazines at two of the largest libraries in the country--the Lenin in Moscow and the Satykov-Shchedrin in Leningrad.

As pointed out earlier, the organization in major cities of pneumotransportation of residential waste is an important, socially significant measure. Nearing completion in Leningrad is an experimental system, the first in the country, for moving 500,000 cubic meters of garbage to a garbage-processing plant in Gorelovo. Master plans have been drawn up for garbage removal by pneumotransport in Moscow and Baku. Of major interest in the matter of implementing the Food Program are pipelines in which a continuous train of containers is kept moving at 10-20 kilometers an hour with the aid of an electromagnetic solenoidal motor. The first such systems were put into operation by Minneftegazstroy at the Ministry of Procurement's plant in Belyshev to move fodder, and in Cheliabinsk.

Another type of efficient transportation--a special container train of very high productivity--was designed by a group of scientists from the research institute VNIIPITransprogress led by P. Kovanov. The first such experimental system with a hydraulic turboengine has been built in Moscow region. It transports quartz sand over a distance of 1.5 kilometers to a concentrating plant. The length of the train is 560 meters, moving at 20 kilometers an hour.

Such systems can be widely used in the coal-mining industry (for example in the Kansko-Achinskiy basin to haul coal from strip mines to steam power plants), in ferrous metallurgy and in the building-materials industry.

Especially promising is the creation and development of pipeline systems for hydrotransportation of large volumes of coal, ore concentrates and other raw materials. Where container pipeline systems and conveyer trains can significantly reduce the number of short-distance hauls (50-60 kilometers) hydrotransport is capable of moving cargoes by pipeline over many thousands of kilometers.

The Experts commission of the State Planning Committee has reviewed a project to build the first experimental pipeline from the Kuzbass to Novosibirsk. The coal will be mixed with water in a proportion of one to one with the pulp to be pumped through a pipeline. The commission simultaneously proposed the

creation of a powerful hydrosystem over 4,000 kilometers long and with an output of 50-60 million tons annually. Other proposals would increase the concentration of coal in the pulp by using methanol and water to carry the coal. Preliminary research has shown that methanol is easily separated from coal. In this way two energy sources can be transported simultaneously--coal and methanol which serves as a basic raw material for the chemical industry and is at the same time a wonderful component of motor fuel.

An analysis of the situation in the launching of new continuous pipeline systems reveals that in spite of the good work done by various organizations of Minneftegazstroy, the Georgian SSR and the Special Construction Bureau "Transprogress" RSFSR these progressive transport systems have nevertheless not been duly developed.

The November (1982) plenum of the CPSU Central Committee, where the problem of expediting the introduction of new technology was given high priority, indicated that it is imperative to identify and eliminate the specific snags hindering scientific and technological progress.

What is impeding progress in this particular matter?

In our opinion, for certain ministerial and departmental administrators it is more customary to submit requests for trucks and fuel to the State Planning Committee than to devote their energies to new types of transport whose incorporation into production, to be frank, is something of a hassle. To be specific, we could name, for example, the Ministry of Ferrous Metallurgy which is not doing very much to implement plans for the hydrotransportation of ore concentrates from the Kursk Magnetic Anomaly and the Krivorozhskiy Basin, plans for which were approved by the Experts commission of the State Planning Committee. The Ministry of the Coal Industry is holding up work on technological certification of hydrotransportation of Kuznetsk coals to Novosibirsk; the Ministries of the Construction Materials Industry of the USSR and the union republics are showing little interest in container pipeline pneumosystems whose incorporation into production could radically improve quarry mining.

Particular blame in this new field must be laid on the Ministry of Construction, Road and Municipal Machine Building which did not carry out the assignment handed down to it as far back as 1973 to organize the production of equipment for pneumocontainer systems. As a result the machinery is to this day being produced by non-specialized plants which inevitably affects its quality.

The transportation of goods by pipeline must in the near future become as customary as rail and truck transport. Underground pipelines will be able to move hundreds of millions of tons of various cargoes and, moreover, to increase labor productivity many times over, eliminate loss and save petroleum.

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MISCELLANEOUS

BRIEFS

PNEUMATIC DELIVERIES--The Production Association "Zavod imeni Frunze" of Penza has put into trial operation the first stage of a pneumatic pipeline complex to move bicycle parts between shops. The parts are loaded into containers at the galvanoshop which are then fed into a tube 600 mm in diameter. The operator switches on an air-regulating machine sending the containers on their way. After 1 1/2 minutes, having traveled almost a kilometer, they arrive at the assembly shop. This system of rapid and convenient transportation was created by the association's own specialists in conjunction with the Special Construction Bureau "Transprogress" of Moscow. Its use releases forty workers for other jobs. [V. Vinogradov] [Text] [Moscow PRAVDA in Russian 6 Jan 83 p 3] 12258

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Monday, 9 May 1983